DRAFT CERCLA EMERGENCY RESPONSE ACTION REPORT
APEX FACILITY FIRE SITE
APEX, WAKE COUNTY, NORTH CAROLINA
EPA CONTRACT NO. EP-W-05-054
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Prepared for

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Appendix

1.0 INTRODUCTION

This report has been prepared under the provisions of Technical Direction Document (TDD) No. TTEMI-05-001-0023, which the U.S. Environmental Protection Agency (EPA) Region 4 assigned to the Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) under Contract No. EP-W-05-054. The overall scope of this TDD, which is monitored by On-Scene Coordinator (OSC) James Webster, was to provide technical assistance during emergency response activities at the Apex Facility Fire (Apex) site in Apex, Wake County, North Carolina. Specific elements of this TDD included documenting on-site conditions and activities with logbook notes (Appendix A) and photographs (Appendix B), providing air monitoring, performing field hazard categorization (hazcat) testing, and preparing a final report.

This Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) emergency response action report discusses the site background (Section 2.0) and emergency response activities (Section 3.0), and summarizes the data collected during the response (Section 4.0). In addition, six appendices are included with this report. Appendix A provides a copy of Tetra Tech's field notes, Appendix B presents a photographic log of emergency response activities and site conditions, Appendix C provides a table of witnesses to the emergency response activities, Appendix D presents the figures referenced in the report, Appendix E provides copies of indoor air quality surveys performed at nearby businesses, Appendix F contains air monitoring data tables, and Appendix G contains sampling reports prepared by the North Carolina Department of Environment and Natural Resources (NCDENR).

2.0 SITE BACKGROUND

Environmental Quality Company (EQ), located in Apex, Wake County, North Carolina, is owned by EQ Holding Company, Inc., and functions as a temporary storage facility for hazardous and industrial waste. The facility, with geographical coordinates of latitude 35.72472° north and longitude 78.83833° west, is located at 1005 Investment Boulevard in Apex, North Carolina, a small suburb of Raleigh with about 28,000 residents (Figure 1). EQ, formerly known as Wayne Disposal, has been in the waste removal industry for nearly 50 years and owns and operates several hazardous waste storage, treatment, and disposal facilities in the eastern United States. The company's website claims it has "the capability of accepting nearly every US EPA waste code." Additionally, EQ operates a remediation and emergency response division, handling releases of hazardous materials for its clients.

As part of its operating system, EQ maintains several temporary storage facilities at various locations. The purpose of these temporary facilities is to aggregate small loads into larger (financially viable) shipments to final disposal destinations. The Apex facility was one of these temporary storage facilities, performing a variety of waste collection and consolidation operations under NCDENR permit no. NCD982170292-R1. Specifically, the facility bulked and solidified small quantity hazardous and nonhazardous waste streams into larger consolidated quantities. Although the facility accepted d-, f-, k-, p-, and u-listed wastes, EQ claims the Apex plant mainly transferred solvent-impregnated rags and bulked latex paint. Additionally, EQ accepted a variety of waste from a local discount department store, consisting of returned and expired merchandise. An electronic waste program (not involved in the fire) and a household hazardous waste program were active operations at the facility. EQ also accepted traditional drummed waste from a number of sources, storing it on site until sufficiently large quantities were collected for shipment to one of its treatment and disposal facilities. EQ separated the waste into six concrete bays, which housed flammables, oxidizers, corrosives, household goods, and lab packs. On Thursday, October 5, 2006, the sixth bay was unused, while the other five contained approximately 2,700 containers of various wastes.

At approximately 2130 on October 5, a fire erupted and an explosion occurred within the 7,300 square-foot facility. Within minutes, the entire structure was on fire, and a cloud of smoke descended upon the downtown residential district of Apex. Emergency 911 operators began receiving reports of a chlorine-like odor at 2137 that evening. Apex Volunteer Fire Department (AVFD) and Apex Police Department (APD) officials arriving at the scene described a thick blanket of acrid smoke almost a quarter-mile away from the facility. They were at first unable to determine the origin of the smoke, but eventually, the EQ facility was determined to be the source. Within a few minutes, several large explosions occurred inside the building, and mutual aid organizations such as the Raleigh Fire Department began arriving on scene to assist. A "reverse 911" system, which calls residences within a defined geographical area, was initiated. Emergency officials also began a door-to-door notification process. Citizens in areas already blanketed by the cloud were told to shelter in place. Citizens in areas ahead of the cloud were urged to evacuate. Evacuation efforts were hampered by strong and highly variable winds that carried the plume a great distance in several directions. Fire fighters were forced to move their command post several times to avoid being inundated by the plume. The evacuation area (see Figure 2) eventually grew to almost 2 ½ miles downwind to the west of the facility, with residents being told to leave or shelter in place. The fire and evacuation eventually impacted nearly 17,000 residents. Shelters were placed at local schools to house the displaced.

Apex police and fire personnel closed all roads entering the exclusion area, including two U.S. highways and one state highway. The CSX rail line through town was also closed, and the aviation airspace over the town was restricted. Several emergency personnel were overcome by fumes during the evacuation process and were treated at a local hospital. No serious or life-threatening injuries were reported.

EPA received official notification of the blaze at about 0100 hours on October 6, 2006. Two OSCs already in Raleigh on official business, Chris Russell and Ted Walden, were dispatched to the scene to offer assistance to the AVFD. Also, OSC Webster was dispatched from Atlanta. At 0200 on October 7, EPA notified Tetra Tech of the event and requested mobilization of sufficient personnel and equipment to perform entries in Level A personal protective equipment (PPE), monitor for toxic gases and vapors, and document site activities and conditions.

3.0 EMERGENCY RESPONSE ACTIVITIES

As requested by EPA, Tetra Tech START responded to the emergency at the Apex site on October 7, 2006, to document on-site conditions and activities with logbook notes (Appendix A) and photographs (Appendix B); perform Level A entries into the facility, if necessary; perform air monitoring; collect samples from containers, and perform hazcat testing. Tetra Tech mobilized personnel from its offices in Atlanta, Georgia; Nashville, Tennessee; Cincinnati, Ohio; and Louisville, Kentucky. This section summarizes emergency response activities conducted from October 6 through October 28, 2006.

October 6, 2006

OSCs Russell and Walden, accompanied by START member Scott Covode, arrived on scene at approximately 0130. They reported to the Incident Command Post (ICP) on Schieffelin Road. The Incident Commander (IC) was AVFD Chief Mark Haraway. Numerous agencies had reported to the scene by this time, including fire departments from most of the greater Raleigh area, the NCDENR Division of Air Quality (DAQ) Air Toxics Analytical Support Team (ATAST), and EQ's air monitoring contractor, the Center for Toxicology and Environmental Health (CTEH). Also, the event had stirred great interest from local and national media, and emergency personnel were permitting response personnel only into the command post area.

OSCs Walden and Russell met with NCDENR representatives, who expressed concerns about runoff affecting a nearby tributary of Middle Creek. OSC Walden and NCDENR personnel inspected the creek and found it to be unaffected. (NCDENR's Division of Water Quality sampled the creek and downstream ponds after the fire and found no impacts.) ATAST requested permission to enter the perimeter to emplace air monitoring instruments inside and on the perimeter of the evacuation zone (Figure 3). An AVFD Level B PPE entry team cleared the air before ATAST emplaced air monitoring instrumentation and collected air samples. ATAST set up AreaRAE gad detectors at five locations. All units were equipped with a volatile organic compound (VOC) detector and several additional sensors. The air samples were later analyzed at the ATAST mobile laboratory stationed at the ICP. ATAST's data were not available at the time of this report.

After discussions with the IC, CTEH personnel were allowed to enter the exclusion zone early after dawn to emplace their air monitoring devices. CTEH set up five AreaRAEs at varying distances from the facility, forming a perimeter (Figure 4). The plan was to analyze the air at a distance from the facility and gradually place the units at closer locations in order to define the smallest exclusion zone necessary to ensure public safety. A sixth unit was attached to a vehicle and roamed throughout the exclusion zone. CTEH collected air monitoring data continually throughout the response. The data collected are summarized and discussed in Section 4.0.

Because of unknown concentrations of contaminants in the fire and the dangers of fire-fighting in Level A PPE, AVFD decided to let the fire burn down before attempting any suppression measures. A planning meeting was held, and it was determined that the City of Raleigh's hazmat team would enter the area surrounding the building and assess the fire.

At 1145, a meeting was held to determine incident objectives and formulate a response plan. Attendees included EPA, NCDENR, EQ, CTEH, AVFD, the City of Apex, and START. A four-step plan was initiated, with the main goal of preserving public safety through fire suppression, air monitoring, and air sampling. After the fire was extinguished, the fire investigators would take control of the scene to investigate the cause of the fire. Once the investigators released the scene, the appropriate local, state, and federal regulators would assume control to investigate any potential regulatory violations. After all regulatory agencies were satisfied, EPA or NCDENR would ensure that proper cleanup efforts were completed.

At 1330, the Raleigh hazmat team completed its entry into the building. Three pockets of fire remained. Much of the roof had collapsed, preventing easy access to the burning material. EQ requested permission to bring in a private industrial fire-fighting company, United States Environmental Services (USES), to break down the building and extinguish the fire, and AVFD agreed.

At 1630, START entered the evacuation zone to assess CTEH's monitoring efforts and check the results. START performed air monitoring for radioactive particles, VOCs, oxygen levels, explosive gases, carbon monoxide, hydrogen sulfide, and chlorine. Background readings taken by START at the ICP showed nondetections for all contaminants and the expected background radiation. START's air monitoring showed no elevated readings at any of CTEH's monitoring stations. No radiation levels greater than background were encountered. START continued to spot check CTEH's monitoring stations throughout the response. CTEH was, by this time, validating the first set of sampling data, which would be released later in the day. These data were given to a START geographical information system (GIS) analyst, who created maps depicting the data. The data is summarized and discussed in Section 4.0. EPA's equipment warehouse contractor, G2, arrived on site with a mobile command post (MCP). START used the MCP as a workstation for the GIS support.

At 1700, another meeting was held between the involved parties. EQ requested that no residents be allowed to return to their homes until the fire was completely out, regardless of air monitoring results; the possibility was too great that a flare-up and subsequent release would force another evacuation. All parties agreed. Representatives from the Agency for Toxic Substances and Disease Registry (ATSDR) arrived on scene to assist OSC Webster with analyzing the CTEH data to determine the potential public health effects from exposure. START's periodic checks of the air monitoring stations concurred with CTEH's results; no sustained elevated readings of any analytes were encountered outside of the immediate vicinity of the facility. ATSDR and EPA agreed that the data showed no cause for concern thus far. CTEH received approval to create an additional air monitoring perimeter closer to the building. Eleven monitoring locations were now established, six directly around the area of the building and the original five established to monitor conditions near the closest residential areas (Figure 5). The roaming unit was fixed as part of the additional perimeter. CTEH also began taking 24-hour vacuum samples of the ambient air at five of the six inner locations surrounding the facility and delivering the samples to an independent laboratory for analysis.

At about 2100, USES began tearing down the building with heavy equipment and spraying foam onto the burning material. Berms were used to collect the water runoff, and USES used vacuum trucks to transfer the water to a frac tank located down the road from the facility. At about 0030, USES declared the fire extinguished, with only a few isolated pockets of smoldering debris. USES continued to dismantle the building throughout the night. Occasional flare-ups occurred, but they were quickly contained by standby crews. By 0500, USES had dismantled the entire structure, and crews broke for rest.

START remained on site throughout the night for continued documentation and air monitoring using a four-gas meter and a photoionization detector (PID). Monitoring was conducted approximately every hour. No sustained readings of VOCs were detected, which concurred with CTEH's results. The only elevated readings occurred when smoldering debris was disturbed, and those readings were not sustained. The data collected are discussed Section 4.0.

October 7, 2006

EPA and ATSDR reviewed the latest data from ATAST's sampling and CTEH's sampling of the outer perimeter and concluded that parts of the exclusion zone posed minimal risk to the general public. Thus, the exclusion zone was reduced to an area generally ¼ mile from the facility (Figure 6). CTEH and USES also solidified the respiratory requirements for the exclusion zone. All areas outside the footprint of the original building required Level D PPE. Any entry into the facility required Level C or greater PPE. Based on the findings, DWQ determined there was insufficient cause to continue monitoring the surrounding locations and demobilized ATAST later in the day.

AVFD and the APD developed a reoccupation plan for residents. The evacuation zone was divided up into five zones for reentry, referred to a Phases 1 through 5 (see Figure 7). The zones would be opened one at a time, every hour beginning at noon.

With the extinguishing of the fire and reentry of the residents, site activities focused on fire and regulatory investigations. An investigator entry was planned for the afternoon. At 1100, a pre-entry meeting was held with the AVFD, EPA, NCDENR, North Carolina Office of Safety and Health (NCOSH), EQ, CTEH, START, and the Chemical Safety Board (CSB), an independent federal agency charged with investigating industrial chemical accidents. The primary purpose of the pre-entry meeting was to determine the proper health and safety protocol for the entry and plan for the most economic use of resources while in the facility. At approximately 1430, CTEH performed an air monitoring survey in Level B PPE and

determined that Level C PPE was adequate. The investigators then entered the facility in Level C PPE. The investigators completed their entry at about1645, and the site was released to EQ for remediation operations. CSB would continue its investigation and determine the need for a full inquiry in about two weeks. START did not participate in this or any other entry into the facility during the response.

START continued to perform confirmatory monitoring of CTEH's instrumentation. At about 1730, OSC Webster reported that prior to the fire, EQ housed cyanide-bearing wastes at the facility. START was directed to perform air monitoring for cyanides along the perimeter of the facility. Background readings in the ICP parking lot showed nondetections for cyanide, and no elevated readings for cyanide were recorded during the monitoring. Late in the day, the monitoring perimeter was again constricted, and the final configuration of air monitoring instruments was achieved. This configuration relocated the original five AreaRAEs used to monitor neighborhoods some distance from the facility up to the facility fenceline; the other six monitors remained in the immediate vicinity of the building (Figure 8). This allowed residents to return to the last of the nearby homes evacuated south of the facility. Additionally, CTEH performed an indoor-air quality survey of Capitol Coffee, a business located across the street from the facility (see Figure 9). No VOCs were reported. CTEH personnel remarked that they were also scheduled to perform similar surveys at several other nearby businesses.

Because the fire was extinguished and EQ's contractors appeared capable of performing the required cleanup activities, OSC Webster released four START personnel during the day. Five START personnel remained to continue checking CTEH's monitoring activities and prepare GIS data and maps.

At the end of the day's activities, OSC Webster demobilized three additional START members and the response vehicles, including the Level A equipment trailer, which were scheduled to depart the site the following morning. OSC Webster retained one START member for field operations and another for GIS support.

October 8, 2006

Heavy rain during the night forced the removal of about 4,000 gallons of runoff into the frac tank. USES reported that the berms held, and no impact was anticipated to the nearby creek. START performed VOC and cyanide air monitoring at the perimeter locations throughout the day. Additionally, EPA asked START to accompany CTEH on several indoor air-quality surveys at nearby businesses. The businesses included the undamaged EQ administration building, Active Machinery Sales, J.J. Nelson Flooring,

Forbes Custom Cabinets, Dream Sports, East Jordan Iron Works, PPW Lumberyard, and Apex Gymnastics. CTEH and START both recorded VOC readings, and START recorded cyanide readings. No VOCs or cyanide were detected in any of the buildings. CTEH's summary reports are included in Appendix E, and the indoor air monitoring locations are shown on Figure 9.

Exemption 6 Personal privacy

Late in the day, a resident notified EPA that the previous night, another resident had experienced respiratory distress at [redacted] about ½ mile from the facility. START and CTEH performed an indoor air-quality survey of the resident's home and concluded that no VOCs or cyanide were present. The distress may have been due to exposure to household chemicals during intense cleaning by the resident.

CSB performed another entry late in the day to gather more information on the fire's possible cause. Again, CTEH performed air monitoring prior to the team's entry. START performed bump testing of CTEH's instrumentation and reviewed its calibration logs. All instruments tested within normal operating parameters (less than 10 percent difference between actual and reported values), and all instruments appeared to be calibrated twice daily.

Prior to ending the day's activities, OSC Webster made plans to meet with interested governmental agencies the following morning at a local hotel. START prepared information packets with GIS maps and electronic data tables and copied the information onto compact discs for distribution. OSC Webster was satisfied that EQ's contractors were performing satisfactorily and instructed START to prepare to demobilize all remaining resources after the meeting.

October 9, 2006

START arrived on site and prepared the information packets. OSC Webster authorized the demobilization of START GIS support, leaving only one START member remaining on site. The meeting began at about 1000 and was attended by EPA, START, and NCDENR's DWQ, DAQ, and Division of Waste Management (DWM), the division responsible for inspecting the facility during normal operations and ensuring compliance with the permit. The CSB was also in attendance.

During the meeting, each entity summarized its findings during the response. DWQ stated it had sampled and analyzed downstream locations and found no impacts to water quality from the fire. The DWQ's Aquifer Protection Section planned to team with Wake County and survey the area for potable and

nonpotable wells. Owners would be encouraged to collect samples. DWM reported the facility was issued a compliance order earlier in the year for allowing the residue in an improperly cleaned truck to react with a new load. DAQ reported that ATAST had collected real-time and laboratory data, all of which showed nondetects except for sporadic slight detections. However, ATAST was concerned about off-site migration of the ash and dust into the surrounding community during the upcoming remediation.

The CBS reported that its investigation was still in the exploratory phase. No decision had been made concerning whether a full investigation (lasting up to a year or more) would be initiated. The CSB stated that its investigation was not expected to hamper remediation efforts.

A plan was formulated to oversee EQ's remediation efforts and ensure they met with applicable regulatory requirements. NCDENR's DWM agreed to regulate the cleanup under the facility's existing Resource Conservation and Recovery Act (RCRA) permit. NCDENR would review all the plans concerning the cleanup and monitor the contractor's progress.

After the meeting, EPA demobilized START from the site. START returned to Atlanta the following day.

October 10 – October 21, 2006

Once DENR assumed control of the site, USES and CTEH prepared remediation and monitoring plans for submittal to NCDENR for approval. The plans were submitted and approved on October 20, 2006. EQ employed URS Corporation (URS) as its environmental consultant, hired to monitor EQ's other contractors to ensure adherence to the workplans. OSC Webster maintained communication with NCDENR to provide technical assistance, if needed.

October 22, 2006

At NCDENR's request, EPA ERRB dispatched a federal OSC to provide technical assistance to the state, which remained the lead regulatory agency for the response. OSC Webster arrived at the site he morning of October 22, 2006. EQ cleanup contractors had segregated and crushed empty containers and consolidated other debris and solids within the six bays of the warehouse. Each bay was remediated individually to prevent commingling of incompatible materials. All solid material was loaded into roll-offs for disposal profiling. Liquid wastes contained within each bay were solidified with soil and Portland cement and loaded into roll-offs for profiling. Free liquids (consisting mostly of firefighting

water and accumulated rainfall) were pumped into frac tanks. Workers engaged in the segregation activities wore Level-B respiratory protection. Some activities were downgraded to Level-C PPE during the latter part of the workday after all debris was removed from Bay L (the lab pack area).

CTEH continued to perform air monitoring during the remediation efforts. Air monitoring from October 22 through October 28 consisted of work zone and perimeter real-time monitoring for VOCs, mercury, hydrogen cyanide, and acid gases. In addition, CTEH continued to collect air samples for laboratory analysis. The sampling parameters included VOCs; benzene; methylene chloride; vinyl chloride; metals including lead, inorganic arsenic, and cadmium; polycyclic aromatic hydrocarbons (PAH); pesticides; aldehydes; mercury; and cyanide. Air monitoring results are summarized in Section 4.0.

October 23, 2006

EQ cleanup contractors continued solidification of liquids pooled within Bays E and O. Crews also began power-washing the concrete pad on the north side of the central loading dock (Bays F, H, and L). All wash water was collected and transferred to a frac tank pending disposal profiling and off-site shipment. Workers engaged in power-washing used Level C respiratory protection during these activities, and the trackhoe operator used Level B PPE during solidification work in Bays E. and O

October 24, 2006

START mobilized to the site the previous night and arrived the morning of October 24. EQ cleanup contractors continued solidification of liquids pooled within Bays E and O. Crews completed power-washing the concrete pad on the north side of the central loading dock (Bays F, H, and L). All wash water was collected and stored on site pending disposal profiling and off-site shipment. Workers engaged in power-washing used Level C respiratory protection, and the trackhoe operator used Level B PPE for solidification work in Bays E and O. Solidification activities were completed, and most of the soil and Portland cement used in the process was loaded into roll-off containers and stored on site pending characterization and disposal.. START documented site activities and conducted periodic air monitoring to confirm and corroborate CTEH monitoring results.

October 25, 2006

EQ cleanup contractors completed solidification of the liquids pooled within Bays E and O. Two drums of sodium, a water-reactive metal, were overpacked in oil to prevent further reactivity. Remaining solidified soils and a partial section of the earthen berm around the affected portions of the bays were

loaded into roll-offs for profiling and disposal. Crews began power-washing the concrete pad on the south side of the central loading dock (Bays A, E, and O). All wash water was collected and stored on site pending disposal profiling and off-site shipment. Level-C respiratory protection was used for these activities. START documented site activities and conducted periodic air monitoring to confirm and corroborate CTEH monitoring results.

At approximately 1300, EQ representatives received an injunction to cease all operations and allow litigants in a civil action to collect independent samples for analysis. Operations ceased, and contractors began to prepare for demobilization.

October 26, 2006

EQ cleanup contractors were prohibited from performing recovery operations due to the injunction. The plaintiff's attorney and environmental consultants arrived at approximately 0900 and prepared to begin sampling. EQ requested a description and scope of the sampling and proof of training and medical monitoring for any personnel entering the exclusion zone. This delayed the plaintiff's access to the site until 1100 hours. At that time, one of the plaintiff's environmental consultants, Mr. David Duncklee of Duncklee & Dunham Environmental Consulting, was able to produce necessary training documentation and was, subsequently, given a safety briefing by EQ contractors. He was allowed on site in Level D PPE to select sampling locations without entering the exclusion zone.

At 1430, approval was granted for the plaintiff to conduct sampling. A verbal agreement was reached between the plaintiff's attorney, Mr. Donny Dunn, and EQ's attorneys, Ms. Jacqueline Terry and Mr. Fred Ron, to allow EQ to resume recovery operations, replace berms and pump sumps, and conduct other activities necessary to secure the site after the sampling event was completed. It was further agreed that the sampling would be completed by 2200.

At 1530, personnel from URS, EQ's environmental consultant, entered the site with the plaintiff's consultants to split samples for independent analysis. Additionally, a CTEH representative entered the site with the samplers to conduct real-time air monitoring. The following samples were collected:

- One soil/solid sample from the existing berm soil stockpile
- Two water/liquid samples from the sumps, one from Bay A and one from Bay O
- One water/liquid sample from the first frac tack filled during activities

- Four soil/solid samples from locations around the site
- Two samples of soil/solids from roll-offs with materials from the bays
- One water/liquid sample from the stream on the western edge of the property
- One sediment sample from the stream on the western edge of the property
- Four wipe samples: one from a box truck that was on-site during the fire and three each from various locations on the pad within the burned warehouse footprint

The samples from the berm pile and the two sumps were collected first to allow EQ contractors access to those areas as quickly as possible. Once those samples were collected, EQ contractors immediately began loading the old berm, pumping the sumps, and constructing a new poly-wrapped berm along the southern and western edges of the pad within the burned warehouse footprint. Sampling was completed at 2148. All personnel were decontaminated; the URS personnel and the plaintiff's sampling personnel packaged the samples and demobilized from the site.

October 27, 2006

EQ cleanup contractors were prohibited from performing recovery operations within the exclusion area due to the injunction. Contractors were able to move the remaining portion of the earthen berm into roll-offs and replace it with a poly-wrapped berm. Rain began at approximately 1100. Contractors performed runoff control, including pumping of sumps, berms, and frac tank collection basins as necessary. Rainwater collected in the road as a result of the blocked storm drains, but was considered "noncontact" by NCDENR representatives and allowed to be drained to the storm drains periodically. Additionally, contractors took advantage of the rain as dust control and operated a street sweeper outside the exclusion zone and in the road.

The injunction was vacated at approximately 1730, and recovery operations could resume. However, due to the lateness of the notice, EQ decided not to resume recovery operations at that time. The night crew monitored runoff and pumped and contained rainwater as necessary.

October 28, 2006

After discussions with OSC Webster, START demobilized from the site at 1445. At the time of demobilization, the following tasks remained to be performed by EQ contractors before remediation was complete:

- Pump out all sumps following the rain event

- Clean out sumps in Bays A, E, and O
- Pressure wash Bays A, E, and O, as well as the concrete aprons on the south and east sides of the building footprint
- Decontaminate equipment
- Stage all roll-offs for off-site transport
- Provide for permanent runoff controls by installing additional berms
- Consolidate all liquid wastes into frac tanks

START was contacted by Eric Ramsey of USES and informed that EQ contractors had completed all tasks at approximately 2030 and would demobilize Sunday, October 29, 2006.

4.0 AIR MONITORING AND SAMPLING DATA SUMMARY

During the response, CTEH and ATAST collected air monitoring and sampling data from several locations. START was tasked with assembling and managing the data into one central database. START prepared several figures showing sampling locations, the gradual constricting of the sampling perimeter, and the resultant reduction of the exclusion zones. Figures 3, 4, 5, and 8 depicting these locations are presented in Appendix D.

The data collected from this monitoring and sampling can be divided into two phases: during the fire and after the fire. Monitoring and sampling during the fire was designed to ensure public safety while simultaneously allowing as many residents as possible to safely reoccupy their homes. The methodology used was dynamic, with the sampling locations changing as additional data was collected. In contrast, after the fire was extinguished and site activities focused on recovery and remediation, the monitoring perimeter was maintained in its final form, and monitoring focused more on worker safety and the prevention of off-site migration of dust and vapors.

4.1 EVACUATION MONITORING AND SAMPLING

ATAST was first on the scene with fixed monitors and sample collection devices. ATAST used five AreaRAE monitors during the response. The five monitors were moved twice following response to prevailing wind directions. The three different arrays of the monitors are shown on Figure 3.

Additionally, ATAST collected in Tygon® bags ambient air from within the exclusion zone, particularly where several emergency responders reported experiencing respiratory distress. The air was analyzed at ATAST's mobile laboratory by gas chromatography/mass spectroscopy (GC/MS) methods. ATAST's data were not available at the time of this report.

CTEH began collecting data early the morning on October 6, 2006. Five AreaRAE monitors were placed to analyze for VOCs (Figure 4). Additionally, a sixth mobile unit was placed in an automobile and driven throughout the exclusion zone. The automobile contained a receiver that gathered periodic radio downloads of the AreaRAE data.

From around 0800 on October 6 until 0700 on October 7, 2006, CTEH collected data used to determine if residents could safely return to their homes. CTEH collected over one million discreet data points; the raw data are not attached to this report due to size limitations; however, the data summary tables are presented in Appendix F. Table 1 shows the average concentrations for each unit prior to 0700 on October 7. Of all the readings, only Stations 1 and 9 showed significant detections of VOCs, with maximum readings of 9.8 and 8.4 parts per million (ppm), respectively. It should be noted, however, that Station 1 was a mobile station CTEH intentionally placed in the smoke plume, and Station 9 was originally set up as part of the inner perimeter used during the intermediate monitoring shown on Figure 5. Station 9's exact location was against the fence surrounding the building directly downwind of the facility. Table 1 also shows the average concentrations. These readings were used to determine that there was little danger to the general public. It should be noted that the AreaRAE's detection limit is 0.1 ppm, and all stations but one averaged less than 0.1 ppm (indicating a large number of nondetection readings).

START performed several rounds of confirmatory monitoring during the active fire suppression period. No elevated readings of any type were noted above the background levels in the ICP parking lot. START monitored for VOCs, explosive atmospheres, carbon monoxide, hydrogen sulfide, oxygen content, hydrogen cyanide, and chlorine vapors. Readings were taken at CTEH's monitoring locations, and the data were compared at the time of collection. No discrepancies were noted.

4.2 POST-EVACUATION MONITORING AND SAMPLING

Once the fire was out and the evacuation was lifted, monitoring focused on worker safety and the safety of the closest residents and businesses. CTEH restaged its monitors in two perimeters, one along the fenceline of the facility, and another about ¼ mile away (Figures 5 and 8). Table 2 shows the averages

for all times after 0700 on October 7, 2006, when residents were allowed back into their homes and throughout the duration of the response. Station numbers correlate to locations on Figure 8. Maximum concentrations spiked regularly as material within the building was moved, mixed, and bulked, with Station 11 registering a maximum VOC detection of 188.2 ppm. However, the averages for all locations are lower than the detection limit of the machine.

Table 3 shows the average and maximum concentrations at each station by day. The same pattern can be found in the data as a whole: averages below the machine detection limit indicating only occasional detections of VOCs. Throughout the response, CTEH recorded 1,313,003 individual data records of VOC levels. In total, only 26,945 readings indicated VOCs, which is just over 2 percent.

CTEH also performed particulate monitoring. No data were available prior to October 11, 2006. From October 11 until demobilization on October 28, CTEH collected 24,358 particulate data points. CTEH's particulate data are summarized in Table 4, showing the daily averages and maximum instantaneous readings. Table 5 (attached only electronically) provides the individual data points for the entire time span. The daily particulate averages are very similar to the VOC pattern seen earlier: consistently low levels with little variation throughout the duration of the response. The average of all data points was 0.0438 milligrams of suspended aerosol particles per cubic meter (mg/m^3), with the highest observed reading of 18.554 mg/m^3 recorded on October 17, 2006. Detection was performed with a Ninety of the highest 100 readings were recorded on October 17; however, only six of these instantaneous readings registered above 5.0 mg/m^3, the Occupational Safety and Health Administration permissible exposure limit for nuisance dust, and all of them occurred within a 45-minute time span (5:45 p.m. until 6:30 p.m.). As indicated on Table 4, these readings increased the daily average on October 17 to 0.29 mg/m^3.

NCDENR also performed post-fire sampling of the surrounding community, including collecting soil and wipe samples from numerous locations both upwind and downwind of the smoke plume. Its findings corroborate the conclusion that no off-site migration of toxic vapors or particulates occurred. NCDENR investigated 39 sites for outdoor contamination and 31 sites for indoor contamination. The outdoor sampling consisted of soil sampling and wipe sampling of the exterior of buildings, and the indoor sampling consisted of wipe sampling two separate surfaces within a building. According to the report's authors, "...all three testing programs found only very low levels of certain metals and other screened compounds at locations widely dispersed around the EQ facility site. The results were not unusual for an urban area." NCDENR found no difference between upwind and downwind sampling results, which

further reinforces the belief that no off-site migration occurred. Furthermore, there was no correlation between the low levels of contaminants found in the soil and wipe samples and the ash from the EQ site. Mercury was stored at the EQ facility prior to the fire, and NCDENR performed mercury vapor analyses at 25 residences and businesses as part of the study. No mercury vapor was detected in any of the buildings. The report concludes "...the absence of offsite contamination indicates no long-term public health risk associated with [the] fire." The full NCDENR report is contained in Appendix G.

5.0 SUMMARY

Late on October 5, 2006, a hazardous waste storage facility owned by EQ in Apex, North Carolina, caught fire and spread an irritating cloud of smoke across the small town. Fire officials evacuated almost 17,000 people from the area surrounding the facility. AVFD set up an ICP to facilitate integration of all responding organizations. Because of the unknown nature of the smoke emanating from the fire, the IC decided to let the fire burn down before attempting any fire suppression. EQ contracted a private industrial fire-fighting company, USES, to tear the building down and extinguish the fire. Another contractor, CTEH, was hired to perform air monitoring around the facility and throughout the evacuated area. Once the fire was extinguished, EPA and ATSDR analyzed EQ's monitoring data and determined the evacuation order could be lifted for most of the evacuated area.

After the fire was extinguished, fire and regulatory investigators assumed control of the site to determine the cause of the fire. After their investigation was completed, EQ's contractors began the process of remediating the remaining debris and containers within the burned-out building. EPA hosted a meeting of state and federal regulators during which it was decided that NCDENR would be the lead agency for overseeing remediation efforts at the site.

EQ's contractors prepared remediation plans, which were submitted to NCDENR for approval prior to remediation efforts. The strategy was to operate within the existing bays of the facility to prevent mingling of the various waste streams. Solid and liquid wastes were mixed with Portland cement and staged in roll-offs for disposal profiling. Runoff from rainfall and fire-fighting measures was collected behind berms and pumped into storage tanks for profiling. EQ will dispose of the material at one its own facilities.

EQ's air monitoring contractor, CTEH, maintained air monitoring stations throughout the response effort. Air samples were also collected and analyzed at a fixed laboratory. CTEH's data showed the fire and cleanup had little impact on the ambient air surrounding the facility, both during the fire and throughout the remediation activities. Additionally, sampling by NCDENR showed no widespread contamination in the surrounding areas resulting from dispersal during the fire.

START mobilized to the response during the initial phase of the response to perform a variety of tasks under a worst-case scenario. Because EQ was able to provide the required response effort, much of the START team was demobilized soon after the response began. START provided monitoring of EQ's contractors, documented activities with logbook notes and photographs, developed GIS maps to track the air monitoring locations and data, and performed periodic air monitoring to confirm and corroborate CTEH's data.

Site activities were halted briefly to allow sample collection by environmental contractors for parties to a lawsuit against EQ. Once the samples were collected, EQ's contractors continued to remediate the site. On October 28, 2006, EQ's contractors reported that all wastes were contained and staged for disposal. EQ's contractors demobilized from the site the following day.

APPENDIX A
LOGBOOK NOTES
(30 Sheets)

APEX FACILITY
FIRE

START LOGBOOK #1

"Rite in the Rain"
ALL-WEATHER
HORIZONTAL LINE
No. 390 N

CONTENTS

	REFERENCE	DATE

"Rite in the Rain"®
ALL-WEATHER WRITING PAPER

ALL-WEATHER
HORIZONTAL LINE BOOK

Name Apex Facility Fire

Address 1005 Investment Blvd
Apex, NC

Phone

Project TDD

This book is printed on "Rite in the Rain" All-Weather Writing Paper - A unique paper created to shed water and enhance the written image. It is widely used throughout the world for recording critical field data in all kinds of weather. For best results, use a pencil or an all-weather pen.

Specifications for this book

Page Pattern		Cover Options	
Left Page	Right Page	Polydura Cover	Fabrikoid Cover
Lined	Lined	Item No. 390N	Item No 390NF

6 OCT 06

0900: START cowde see news story
n chemical fire in Apex, NC, while on
-RP Inspections in Raliegh, NC. cowde
ontacts OSC walden who is on the
ERP trip as well. walden Contacts
Chris Russell, in Raleigh as well. Russell
ntacts the Phone duty OSC Ben Franco
ho has heard from START Berry that
ere is a chemical fire in Raleigh. Berry
non-responsive
s also in Raleigh, an [redacted]
SC Russell, in coordination R4 Phone duty
decides to respond and provide assistance
to local emergency response personnel.
1. START Cowde and OSCs waldent Russell
obilize to APEX, NC to find the IC +
CP. checkpoint personnel directed us to
Sleffen Road
30: START + EPA on ~~site~~ isc site
35: IC brief w/ EPA - no entry or
R fighting is planned for the night action
eriod. EQ the waste storage is the bld on fire.
55: 3 policeman, complaining of nausea
- brought to decon on Sheffen road
prox- 300 yards NE of ICP.

6 OCT 06

0300: OSC Russell/walden meet w/
NC DNER Air Quality unknown representative
from water quality raises concerns about
water/contamination from side the site.
The lubricating facility: white lube
is said to have been involved in the
fire as well.
0315: OSC walden leaves w/ 2 personnell
from DNC water quality to check storm
water pathways. walden reports all
clear. only stagnant water in ditches
0330: START cowde + Fung discuss level
A possibility and Fung's decision of
the trailer prior to sending it.
START cowde identifies that
APEX fire chief _____ Holloway (SP?)
is the incident comander
0345: OSC Russell attend brief w/ IC,
DNER air monitoring team lead. Plan
to sample the area near where police
officers blocking traffic @ Hwy 55
+ Hwy 64 have become ill. Level B entry
team will use 4 gas + Chlorine detectors
@ 55+64.
0345: 10 police officers are decored and
sent to area hospitals

6 OCT 06

26: OSC Walden / Russell meet w/ mayor Apex. Explain that EPA does regulate is type of facility and the OSC Russell recently used EQ to dispose of some zardous waste. Russell explained EPAs ole in this operation.
745: EGP moves to location on rda village Road in Winn Dixie parking lot.
800: CTEH arrives on scene. Two vehicles -8 responders and opers dialouge w/ OSC ussell.
900: START Chuck Berry on site. Site update with OSC Russell.
915: OSC Walden goes to field w/ CTEH to set up five area array for multi-toxin monitoring.
30: OSC Webster onsite. Joins OSC alden w/ OSC Russell for visit near site. ire is still burning in part of building nat birds flying through smoke are un-naffected.
START Covode passed response support to START Berry, as OSC Russell passes responsibility to OSC webster.

10-6-6

1145 Meeting held to determine objective + plan. Held with
- Scott Kivisilla, Nat. SR. manager for EQ 908-399-8875
- CTEH air monitoring set up with AreaRAEs to reduce evac zone
- USES is also en route (ETA ≈ 1700)
- Plan.
1. Fire Department is Incident command. Priority is public safety air monitoring, fire suppression
2. After fire is out, Public Safety (Fire) investigators will take control of scene.
3. Once fire investigators
- EPA will support with air monitoring
3. Once fire investigators release the scene, regulatory agencies will talk over, NCOSH, EPA, DENR
4. EPA will initiate remediation activities / oversight after investigative activities have completed.
-Next meeting @ 1700

10-6-6

1330 Level A entry is rumored to have been completed.
- MCP tech G2 arrives
- START still awaiting tasking.
- CTEH is validating/reviewing the data collected this morning.
1330 START has prepared 2 sets of air monitoring for 2 entry teams.
- Level D perimeter monitoring only.
- CTEH's data is back
- ATSDR reps en route. 1500 anticipated ETA.
- Meeting w/ CTEH + EQ + EPA focus on post-fire public instructions
Wake County also present.
- Risk minimization leaflet for the public distribution
- ATSDR SC Cseh w/ ATSDR will be here in ~ an hour.

10-6-6

- OWEQ is collecting water samples, but locations unknown.
CTEH's data suggests repopulating areas outside the sampling ring
- Foam + retardant on way to use at the fire site
1645 D. Reyna, D. Soltys, J. Jones enter perimeter area to check CTEH readings + perform air monitoring
1700 Scott Marus, ~~the Governor~~ EQ, vice President regulatory affairs arrives on site.
1715 Meeting w/ interested Parties.
- There is still fire in the building. Risk of flare-up still too great to repopulate
EQ has hired private fire-fighting group to help extinguish the flames.
- The IC will issue a repop statement.

10-6-6

00 A+SDR Commander CSTH arrives on site. Meets w/ CTEH + OSC Webster

30 START BERRY + Purses off site to get Internet access for large GIS shapefiles.

45 STARTS Reyna, Soltes, + Jones out of zone. off site for Pizza

00 START Berry + Purses Return from dinner

45 START Brad Schroeder on site.

00 C Berry + OSC Webster at EQ facility. USES is using a trackhoe to tear down the walls & ceilings to allow access to the piling.
About 1/2 torn down
- CTEH has Draeger + multiRAEs + other devices air monitoring -
- Two sumps full of drums + USES will fill with foam overnight

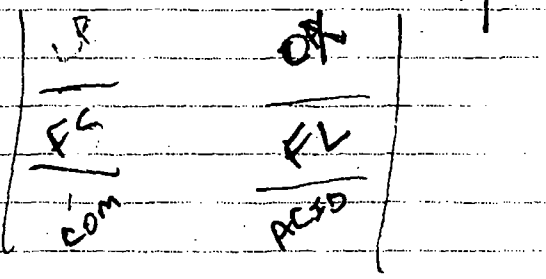
10-6-6

2100 (cont) OSC Webster wants 2 STARTS sitting out here overnight just to monitor.

2210 START BERRY, REYNA & SOLTES DEMOB TO HOTEL
DRAEGER, SCHROEDER, JONES: CARUTHERS REMAIN

2327 START IN TO SITE (ALL 4)
ALL READINGS AMBIENT (0)
20.9% O_2 (PhdLITE)
MET W/ GEORGE MACVANEY, USES

2241 CHIP Dnf, CTEH
11 STATIONS
6 FENCE LINE
5 PERIMETER
HIGH = 10ppm VOC
0 Cl⁻



10-6-06

350 USES UPRIGHTED "SMOKING" DRUM. EVOLVED LARGE CLOUD OF SMOKE/FUMES ALL OK - NO READINGS

2354 START OUT OF EZ

-7-06 @ monitoring

019 - Complete Air Sampling @ perimeter @ on all meters except oxygen level which was 20.9 @ all stations

022 - clear from controlled zone

100 C. DRAPER, JAKE, STACEY D. OFF SITE. STACY CAME ON 2300 HRS.

15 B. SCHROEDER, J. CARUTHERS AT SITE. ALL CALM, VERY LITTLE EXHAUST FROM SITE. FIRE DEPT. STOPPED WATER & FOAM, ON STANDBY. CONTRACTOR TAKING DOWN REMAINING WALLS.
PID - 0
MULTI-GAS - 0

90 CHIP W/ CTEH REPORTS THEY WILL FINISH TAKING DOWN STRUCTURE & MONITOR

10-7-06

THE REST OF THE NIGHT & WAIT FOR FIRE INVESTIGATOR!

SAT. MORNING 10-7-06

0305 Minor hot spot FIRE CREW GOES IN TO EXTINGUISH. SOLID WET PAD
PID = 0 MULTIGAS = 0

0400 AIR MONITOR
PID - 0
MULTI-GAS - 0
LIGHT RAIN

0510 NO WORK BEING DONE AT THE SITE. A LITTLE SMOKE COMING OFF ASH PILE. LIGHT RAIN
PID = 0 MULTIGAS = 0

0600 PID - 0 MULTI-GAS - 0

0700 PID - 0 MULTI-GAS - 0
MONITOR PERIMETER OF PROPOSED AREA TO REMAIN CLOSED.
PID - 0 MULTI-GAS - 0

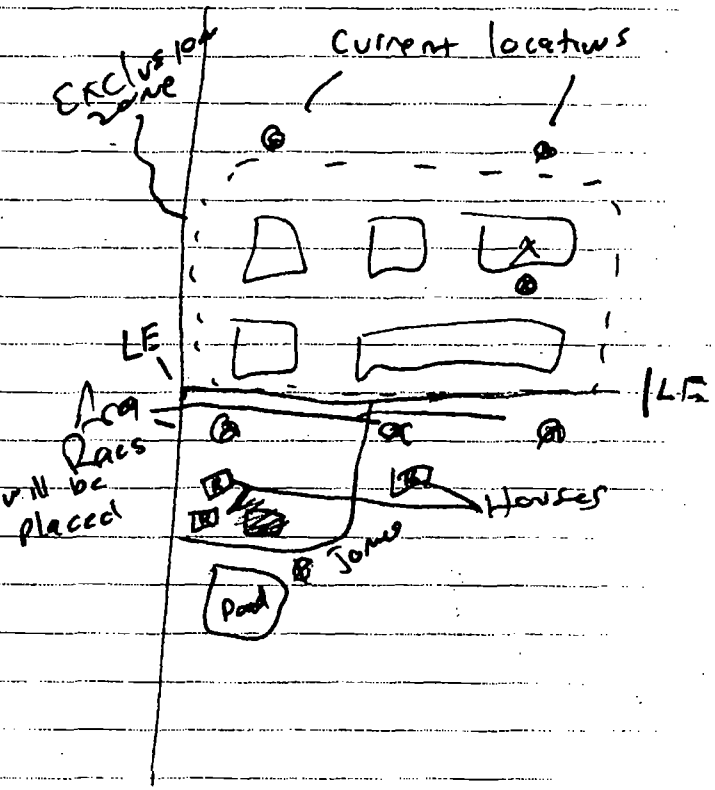
0730 Remander of START crew arriving on site. Get briefing from overnight crew.

Carter

10-7-06

- An official announcement will be made this morning allowing residents to return to within ¼ mile of the facility.
- Meeting w/ OSC, EPA, CTEH, START
  - no site activity at current
  - awaiting Chemical Safety Board (CSB) and Fire Dep Inspectors.
  - no runoff apparent.
  - START will air monitor inner circle plus outer perimeter
  - CTEH's overnight data shows 'blips' but just when debris was disturbed. —
- CTEH offers to screen the local schools if the city wishes. ——
- Crew enters zone to check CTEH monitors
- Meet w/ EPA CTEH Walk County + Apex Fire + ATSDR
  - EPA + ATSDR agree to reduction in exclusion zone for public.

10-7-6



- CTEH has seen no readings except bumps near s. fence.

10-7-06

00 Fire investigation meeting
Entrance requirements
- Turnout gear + full face APR w/ organic P-100 cannisters
- Sumps full of foam but were covered with grating
- CTEH will provide air-monitering within the building during the investigation
- Fire Department will provide Emergency rescue.
- Decon line is set up.
- Tyvek (QC) will be worn over TO gear to make for dry decon.

00 STARTS Delaurentis + Schroeder depart site for Louisville.
- Speak w/ OSC Webster. Wants START to follow monitor CTEH locations throughout the afternoon.
- Lunch

00 Return from Lunch. Begin data Review of CTEH data, but still lacking location data

CEH

10-7-6

1330 STARTS Jones + Salters taking air readings colocated w/ CTEH datapoints.

1405 Prepare table of responding organizations.

1430 Fire investigation begins. START S-Cates Jones the document.

1645 Fire Investigators out of zone. demobing from fire scene. Have released the site back to the Contractor (USES)
- CTEH has done an indoor air screening of clearance of Capitol Coffee.
Will also have at
Will also do Active Machinery - J.J. Nelson.
- Lowest resolution of ArcoRAES is 0.1 ppm
- USES/EQ will not work tomorrow. Fire watch only.

1720 Back at MCP. AISDR demobilizes. OSC Webster mentions that EQ had cyanide-bearing material on site, in the plant. Asks START to perimeter

CEH

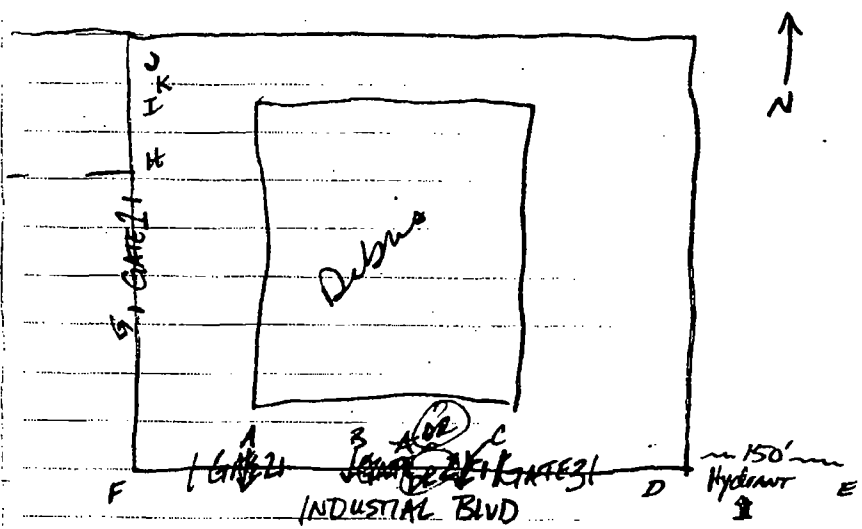
10-7-6

.0 (CIB) Monitor for CN, D. Reyna back in route to MCP. He will not demob tonight. Will instead demob tomorrow.

25 J. Jones calls mc. CTEH has already moved the outer perimeter of monitors. During the 1645 mtg. They discussed moving the monitoring perimeter to the property/fence line of the building OSC Webster agreed, particularly in the light of the businesses ~~across~~ across the street being closed on Sunday. LE will still block the road at current areas to prevent curiosity-seekers.

38 C. Berry + D. Reyna out to site to MONITOR W/ GasAlert HCN, serial # J305-Z005631 - PASSED CAL TEST

WIND SSE DIRECTION 17



Time	Location	Reading	Notes
1845	A	0.0	Monitoring 20 sec.
1847	B	0.0	"
1848	C	0.0	"
1849	D	0.0	"
1852	E	0.0	"
1855	F	0.0	"
56	?	0.0	"
1857	H	0.0	"
1859	I	0.0	"
1859	J	0.0	"
1859	K	0.0	"

1910 returned to MCP & got RI truck+

10-7-06

Level A truck packed & ready to demob tomorrow.

10-8-6

0800 Arrive at site (MCP). Speak w/ OSC Webster.

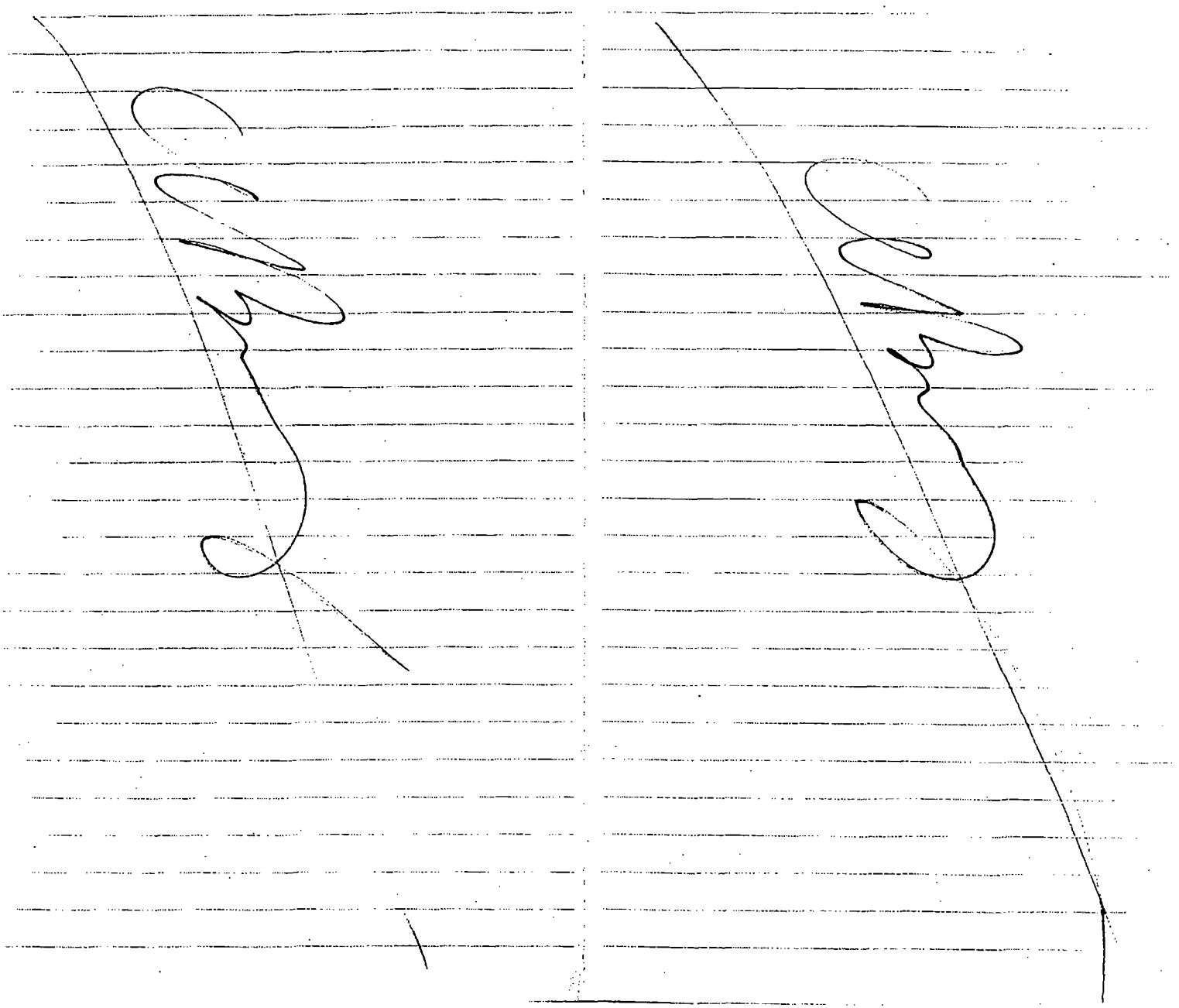
WEATHER - cloudy & drizzle. 11's! in the 70's. —

Work plan - Today's plan:

- Complete data wrangling.
  - get last data dump from CT&H
  - make arrangements w/ CT&H to have next round of data emailed.
  - Work out selected maps for OSC Webster to talk back with him.
  - Resume monitoring for VOCs & HCN at the Area RAE locations.
  - Demob Level A & RI trucks.

0845 Arrive @ EQ w/ STAFF Soltes & Purses. Warming up instrumentation

- A Clean Environment has arrived on site. Also present is CCI. —
- will begin check of CT&H monitors. —



10-8-6

0845 (cont) Photovac 2020/10 PID is calibrated using fresh air (high humidity) Reading 0.0 ppm in ambient. -

0920 OSC Webster reports that Shamrock pumped out ~4,000 gal of liquid 4-6K from the pad. Seems appear to have held.
- OSC has asked CQ to recheck that the building has no open drains ———
- Heavy rains over the site last night.

0945 The PID condensed on the lens when I took it from the truck to the humid outside air. Will not 0. Will talk back & reset. Round not finished

1155 Monitor downwind perimeter for HCN. - All 0.0 readings. —

1230 PID will not reset —

1300 Still cannot get PID working. Rest of crew is here. Preparing to demob ———

1345 OSC Webster asks START to accompany CTEH on

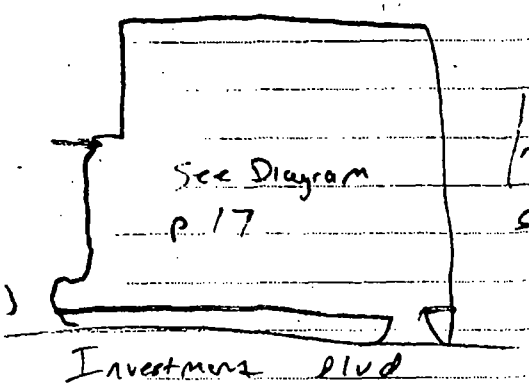
10-8-6

Air monitoring log (VOC, in ppm)

Sample location	Time	START PID	CTEH Results
21	0855	0.0	0.0
22	0905	0.0	0.0
23	0920	0.0	0.0
13	0940	0.0	0.0
14	0945	0.0	0.0
18	0948	0.0	0.0

- ~~Reading~~ The PID condensed on the lens when I mistakenly put it into the truck between points. Will not 0 easily. Will reset after it runs a while.

10-8-6



Location	Time	HCN ppm
A	0955	0.0
B	0955	0.0
C	0956	0.0
D	0957	0.0
E	0957	0.0
F	0953	0.0
G	0953	0.0
H	0953	0.0
I	0954	0.0
J	0954	0.0
K	0955	0.0

Unit tested 15 seconds at each location.

10-8-6

1145 (cont) in the Active Machinery Sales Inc building @ 1001 Investment Blvd. Property is owned by Mike Sawaia, who also owns the building @ 1003 Investment Blvd, directly next door to EQ. 919-387-0092 (w) [redacted] (h)

1003 is rented by JJ Nelson, Inc. contact: Adam Schneider Ops Manager 919-3877441 [redacted]

1002 Investment is owned by Forbes Custom Cabinets Jim Berdel, Pres 919-362-4277 (w) [redacted]

1200 Lt Dream Sports CT212 using ~~MultiRAE~~ MultiRAE w/only VOC sensor calibrated w/ 100ppm Isobutylene calibrated sealed

Rick Hired + Bob Boucher facilities owners along with Paul Nony + Sam Resender

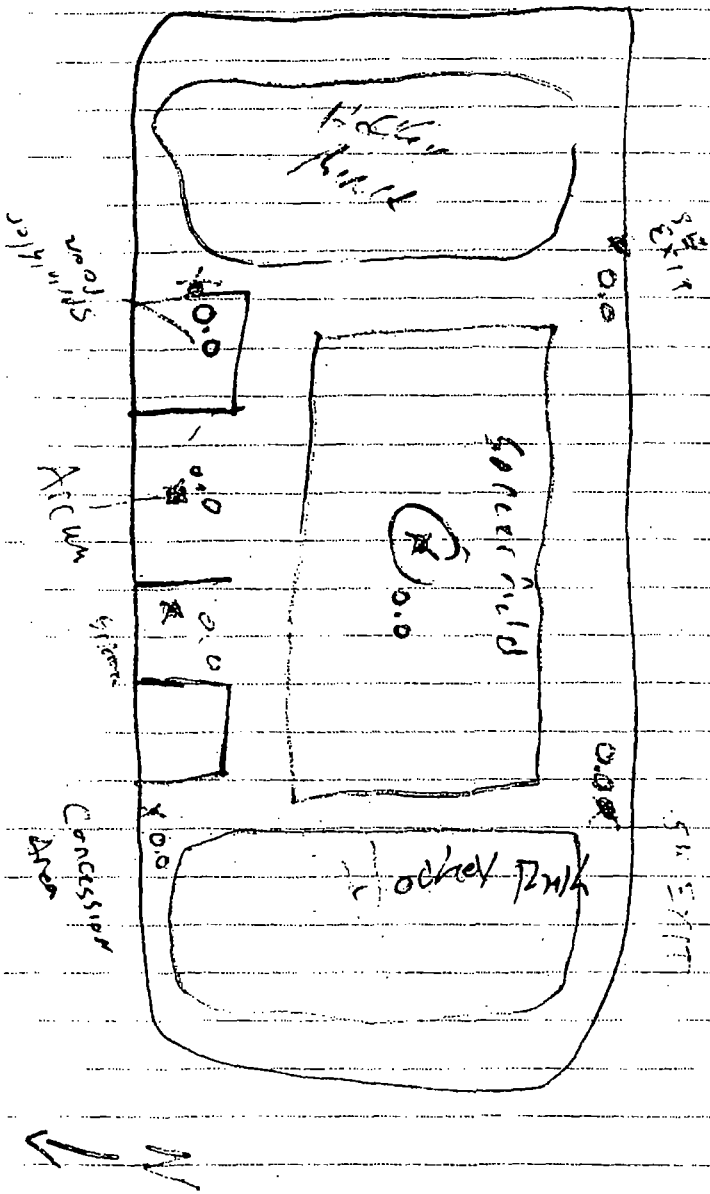
- NO readings above 0.0 ppm

Bump tests w/sharpe gives 1.0 ppm response

ecm

Exemption 6 Personal privacy

10/8/6



10/8/6

- Owners given 'indoor air quality survey by NONY.
1240 A+ Action Machinery Sales
Loc 1 - Copy center - 0.0 ppm
Loc 2 - Break Room - 0.0 ppm
Loc 3 - Warehouse - 0.0 ppm South
Loc 4 - NE corner of Warehouse 0.0 ppm
Loc 5 - NW corner of Warehouse 0.0 ppm
- NO HCN response at any time.
#LATE ENTRY #
1240 (cont) NO HCN ~~exposure~~ response at any time.
* Resume *
- Owner reports NO unusual odor
1240 A+ JJ Nelson. Also owned by M. Shamia @ 1003 Investment.
Lessee reports no unusual odors at entrance
Loc 1 Foyer 0.0 ppm
Loc 2 Copy Room 0.0 ppm
Loc 3 Office 1 0.0 ppm

10/8/6

1240 Location PPM

Location	PPM
Green Office Fish Tank	0.0
Warehouse @ entrance	0.0
Warehouse S bay door	0.0
Conference Room	0.0

NO HCN Response

5? East Jordan Iron Works is requesting an examination of the building across the street.

115 At Apex Gymnastics 1013 Investment
7976 Jean Sciacca 349-8902

Location	PPM
Entrance	0.0
Floor mat center of building	0.0
Foam Pit #1	0.0
Foam Pit #2	6.0
Fridge	0.0
Parent's Room	0.0
Front Office	0.0

MS CAT is following along, collecting ?pe/surface analysis for pH, chlorides Saltisno test method.

NO HCN ~~elevations not~~ response found.

CMB

10/8/6

1330 At PPW lumberyard
Robert Ehlers of Cody Ehlers Group
EHS Consulting & Svcs.
810 Center Street
Facility is actually one property removed from the EG property.
800-845-6160

Location	PPM
Front office	0.0
Bldg 3 SW corner	0.0
Bldg 3 NE corner	0.0
Bldg 2 center	0.0
Bldg 1 breakroom	0.0
Bldg 1 Center	0.0

1400 Lunch

1430 Spoke w/ Ed Cotter to update

1500 A resident has a concern about apparent residue/smoke damage in [redacted] house.

1510 Arrive @ [redacted], Resident ~~suggests~~ complained of respiratory distress after taking a shower last night [redacted]

START + CTEH perform PID

CMB

Exemption 6 Personal privacy

10/8/16

0 (cont) analysis in the bathroom 0.0 ppm on both machines NO HCN. NO visible residue on the walls, NO staining.
- OSC Webster talks with resident and explains about monitoring instruments. The house is ~~downwind~~ upwind from the site. NO visible smoke damage.
- Resident feels somewhat more secure after monitoring is over. OSC Webster advises [redacted] to clean all the surfaces and wash clothing.

10 At CTEH ops center. Check cal logs for all monitoring devices. Devices are cal'd at least once per day. Perform bump test on ~~Minir~~ MultiRAE. Use 10 cubs Exactly 100 PPM w/ 100 ppm isobutylene
- CTEH relays info about CSB entry. They entered @ ~~2~~ 1512. He did not have exit info yet.

Exemption 6 Personal privacy

10/8/16

~~1600~~ Begin check of all CTEH 51
1700 Monitors. Data in Logbook 2
1830 Return to MCP. Discuss Meeting tomorrow w/ OSC Webster
1900 off site

54

10/9/6

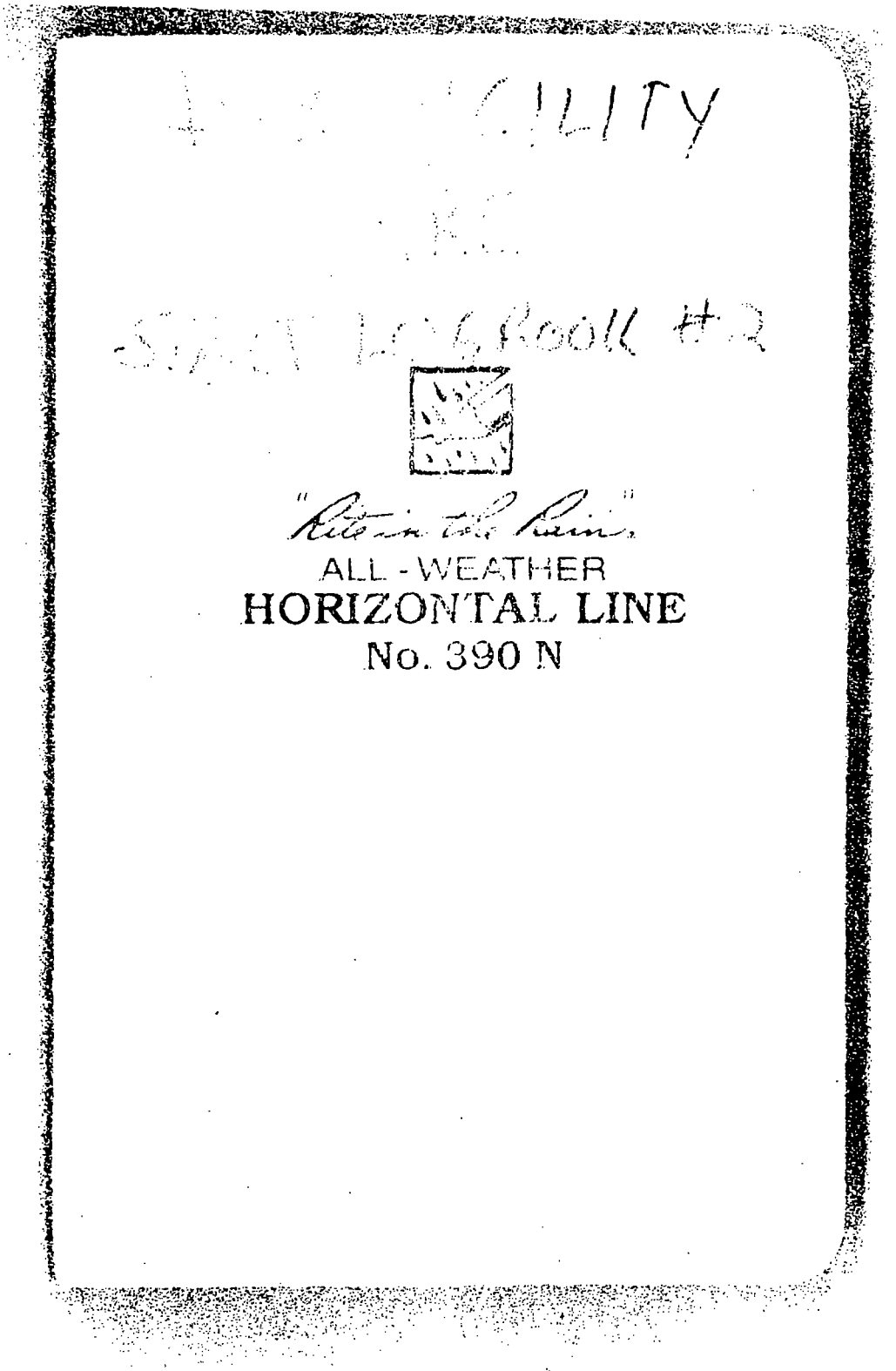
20 Arrive @ MCP. Anna Purses has printed all map sets requested last night. I still need to copy cds.
- speak w/ OSC Webster. He tells START Purses' demob immediately, which she does. She will try to make a 1030 flight to Chicago.

00 Arrive at Comfort Inn in Apex. Set up room & prepare for meeting. Map/CD sets are laid out & waiting for attendees.

45 Depart Comfort Inn. All notes of the meeting kept on dry erase board & photographed. Will be typed up & emailed to OSC Webster along with objectives.
- START released by OSC Webster. I have changed my flight to return tomorrow @ NOON. Will return to [redacted] & work on memo.

10/10/6

1030. Return car. Will proceed to airport for 1210 flight.
1500 Return to PH office. Resume Objectives & expense reports.


"Retain the Line"
ALL-WEATHER
HORIZONTAL LINE
No. 390 N

10/06/06

Site EQ facility Fire

YS Demobilized from Duluth, GA

15 arrived at Apex, NC - meet w/ Casade, Co Benny

15 PID Calibrated photo Vac 2020 pid
Calibrated w/ 50 butylene 100ppm
bump test 99.8 ppm
Ambient 0.0 ppm

FID Calibrated w/ methane 95 ppm
-Eid) bump test 94.6 ppm
Ambient 0.2 ppm

00 Calibrated Drager Multi-warn
Bump test H_2S - 25 ppm
LEL 42 0% Not cal'ed
methane 49 ppm
O_2 - 18 % - ok
CO 50 ppm
(20)

15 Staged PPE - Checked SCBA's
24) Both Med SCBA system checked
- ok Full tanks, Lights & Alarms
working (15)

10/06/06 3

EQ Facility Fire - Apex, NC

GPS of Command post
N 35.74981
W 78.83569
photo taken #1 on ER Camera
orientation West

16:30 preparing for entry Level B into cold zone to Confirm CTECH monitoring Instruments w/ Chlorine Cassette on SPM unit - Also bringing - FID, PID, Ludlem and 4-gas meter

17:00 heading to EQ facility

17:10 at point #2 [Corner of Schieffelin & center
(20) ~~N 35.45~~ N 35.72090
W 78.83961

CTECH unit reading 0.0 ppm Area Rae (VOC

TI Instruments SPM 0.0 Ppm Chlorine
17:14 photos taken Location & close up of SPM Reading

@ facility fire Apex, NC
Readings
0.0 ppm
0 0.0 ppm
gas CH_4 - 0.0 ppm
CO - 0.0 ppm
H_2S - 0.0 ppm
LEL - 0 %
O_2 - 20.9
VOC - 0.0 ppm
25 at CTEH Point #6 Corner of
Briarcliff St and George pl
N 35.72620
W 78.84139
CTEH unit reading 0.0 ppm VOC's
TK instrument readings
SPM - 0.0 ppm chlorine
FID - 0.0 ppm
PID - 0.0 ppm
gas CH_4 - 0.0 ppm
meter CO - 0.0 ppm
Multi-Rae H_2S - 0.0 ppm
vs LEL - 0.0 %
O_2 - 20.7
VOC 0.0 ppm
:40 at CTEH point #5
N 35.72332
W 78.83855

EO facility Fire Apex, NC
private Rd off of End of James St.
CTEH Instrument Reading 0.0 ppm VOC's
* Faint Smell - burnt plastic

TK Instrument Readings
SPM - 0.0 ppm chlorine
FID - 0.0 ppm
PID - ~~0.1 (Intermittent)~~ 0.0 otherwise ppm
4gas meter CH_4 - 0.0 ppm
(Multi-Rae) CO - 0.0 ppm
plus H_2S - 0.0 ppm
LEL - 0%
O_2 - 20.9 %
VOC 0.0 ppm

0.1 ppm Intermittent on VOC — See note

18:00 near facility
N 35.72530
W 78.83862
Monitoring Station #1 Inaccessible
Visible Smoke plume blocking access
to End of Investment Blvd.

18:14 At Air Monitoring station # 3 CTEH
opposite end of Investment Blvd
Smoke plume Visible to South West
N 35.72570
W 78.83115

10/06/06

EQ facility Fire Apex, NC

TEH Instrument Reading

0.0 ppm VOC

Instruments

SPM - 0.0 ppm chlorine

FID - 0.0 ppm

PID - 0.0 ppm

4 gas (MiRae is)
- CH4 - 0.0 PPM
- CO - 0.0 ppm
- H_2S - 0.0 ppm
- LEL - 0%
- O2 20.9%
- VOC 0.0 ppm

:30 at 2431 Schieffelin Rd.

Emparicon Asbestos & lead Management.

Monitoring Station #4 CTEH

N 35. 72168

W 78. 83335

TEH Instrument 0.0 ppm

Instruments

SPM 0.0 ppm Chlorine

FID 0.0 ppm

PID 0.0 ppm

10/06/06

EQ Facility Fire Apex, NC

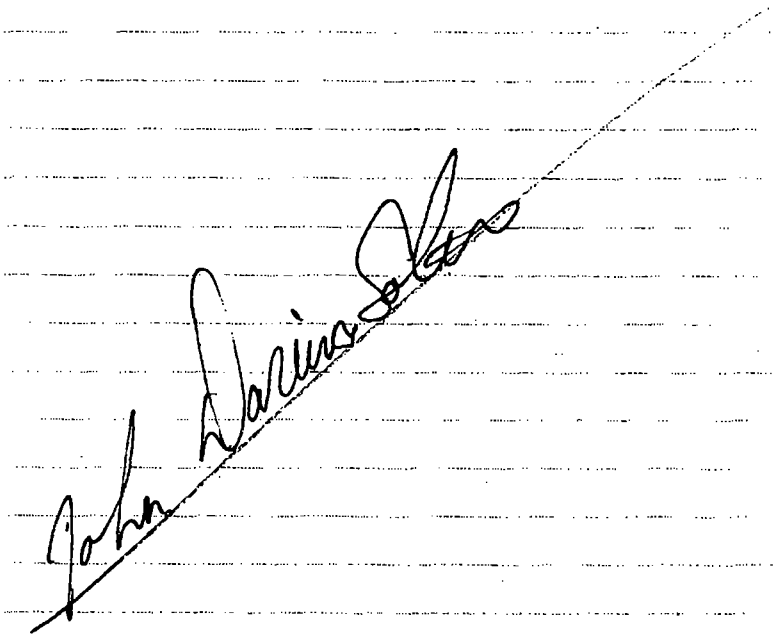
4 gas meter (MultiRae Plus)
- CH4 - 0.0 ppm
- CO - 0.0 PPM
- H_2S - 0.0 PPM
- LEL - 0%
- O2 - 20.9
- VOC 0.0 ppm

18:45 Break for Dinner

19:45 Back at Command post.

Stored equipment for the evening discussed duties for next day.

22:45 off site



10/07/06

Apex, NC EQ facility Fire

:00 onsite - met with OSC Webster
sc handed to facility person
can take photo samples
ief

GPS Locations for facility photos
N 35.72553
W 078.83785

eather - cloudy ~68°F light rain

:40 Mobilizing to perform air monitoring
Facility & parameter START Jones, Saltes,
ina, DeLaReintrie performing monitoring
th SPM (w/ chlorine cassette), FID, & PID

:45 START Jones Spoke with CTEH chip
w/ regards to events at Fire over previous
ight. Encountered water reactive chemicals
at Facility on Industrial Blvd waiting to
eet up with CTEH Air monitoring representative

25 Check Air Quality at stations
up by ~~CTEH~~ (for) CTEH around EQ
acility (Along facility gates & Adjacent
roperty)

EQ Facility Fire Apex, NC 10/07/06 9

time 09:55

parameter	Reading	Location
SPM (chlorine)	0.0 ppm	CTEH Station #2
FID	0.0 ppm	
PID	0.0 ppm	

Time 10:30 CTEH Air monitoring station

SPM (chlorine)	0.0 ppm	At EQ Facility
FID	0.0 ppm	side enterance
PID	0.0 ppm	

Time 10:35 CTEH Air monitoring station

SPM	0.0 ppm	At EQ facility
(10) FID	0.0 ppm	main Gate Enterance
PID	0.0 ppm	N 35.72536
		W 78.83748

Time 10:40 At Back side of

SPM	0.0 ppm	EQ Facility
FID	0.0 ppm	N 35 72541
PID	0.0 PPM	W 78.83691

CTEH Air Monitoring station

Time 10:45 CTEH Air monitoring station

SPM	0.0 ppm	N 35.72628
FID	0.0 ppm	W 78.83725
PID	0.0 PPM	

10/07/06

EQ Facility Fire Apex, NC

o Heading to Facility to perform monitoring at CTEH's monitoring stations

- Spoke w/ NATHAN GRAY, CTEH, about ring convention for air monitoring Locations Location of new sites. CTEH GRAY continued ATIONS & Informed START JONES THAT a Map of the Site was provided. He would rk & Number the Location of All sites THE MAP. 4 Investigators 5 ~~Eight~~ Fire ~~Fighters~~ & one rep from EH - entry Made at 14:45 back up personnel In Contamination Reduction Zone. Note personnel performing ntry Include ATF Agents - walked rameter and took photos & video :18 personnel out of zone - went through Decon Note CTEH Area rae reading 0.0 VOCs at 15:15 and at 16:25 :11 at CTEH monitoring station #20 N 35.72531, W 78.83968

FID 0.0 ppm
PID 3.2 PPM (Background 0.0 PPM In Car)
.vdlum 40 Counts/min (CPM) ≡ Background
SPM 0.0 PPM Chlorine [multigas - Drager MineWarn All 0.0 PPM LEL 0.% 20.9 % O2]

(continued pg 14)

EQ Facility Fire 10/06/06 Apex, NC

Photo log

#1 11:45 Base camp photographer Salter orientation West [camera # 100-387]

#2 17:14 CTECH Air monitoring station #2 photographer - Jake Jones corner of Center st & Schieffelin Rd. orientation SW [camera # 100-387]

#3 17:15 close up of SPM Reading orientation SW [camera # 100-387]

#4 17:23 [camera # 100-390] photographer J. Jones - photo of Intersection orientation SW

#5 17:23 [camera # 100-391] photographer J. Jones orientation NE photo of Monitoring Station #6 orientation E

#6 [camera # 100-392] photographer J. Jones close-up of SPM Reading Station #6

#7 17:40 394 #8 17:34 [camera # 100-393] photographer D. Leyna monitoring Station #5 orientation E

Photo log. 10/06/06

EQ Facility Fire Apex, NC

7 8 17:39 [100-393] Street Sign of Intersection orientation West Photographer D. Reyna

9 & 10 17:59 [100-395 & 100-396] photographer D. Reyna orientation West - Etre (B) Equipment outside Facility

11 18:00 [100-398] photographer D. Reyna - Street sign at Intersection orientation SW

12 18:14 [100-399] photographer D. Reyna - Monitoring station 3 Orientation SW

13 18:15 [100-400] Same as #12

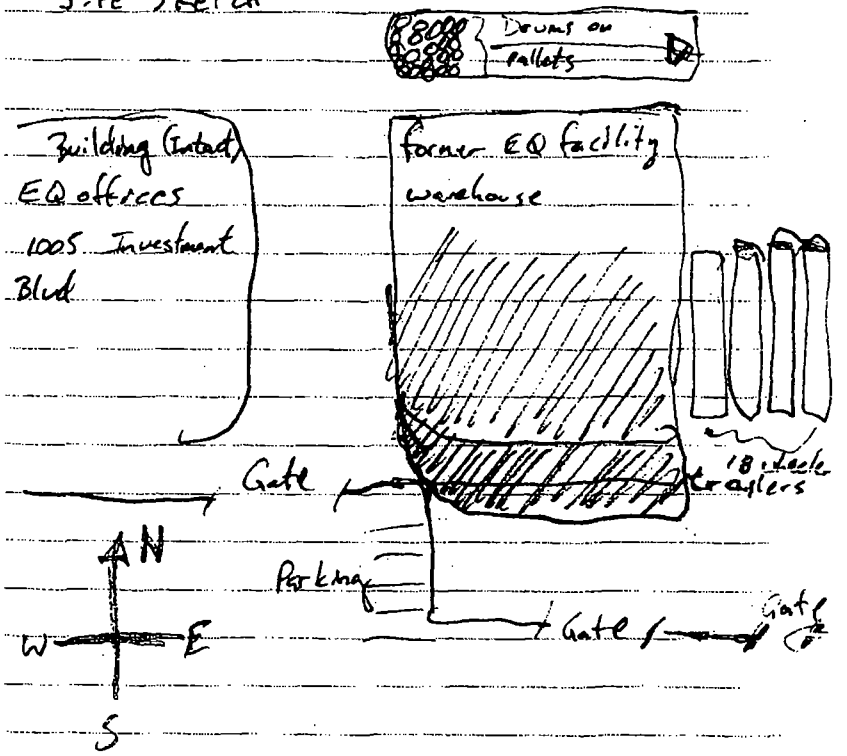
14 18:33 [100-401 & 100-402] Photographer - Reyna monitoring Station #4 orientation NW

15 18:34 [100-403] orientation - N/A Photographer D. Reyna - Drager tube w/ Nickle for Scale

10/07/06

EQ Facility Fire Apex, NC

Site Sketch



Investment Blvd

10/07/06

EQ Facility Fire Apex, NC

:23 at CTEH Air Monitoring Station #19 - N 35.72630, W 078.83987
FID 0.0 ppm
PID 2.4 ppm (Background 0.8 ppm In Cr)
Ludlum 50 cpm [Multi gas All 0.0 ppm 0% LEL 20.9% O_2]
SPM 0.0 ppm

:32 at CTEH Air Monitoring station 16
N 35.72612, W 78.83796
FID 0.0 ppm
PID 1.2 ppm
Ludlum 50 cpm
SPM 0.0 ppm
Multi gas All 0.0 ppm LEL 0% O_2 - 20.9%

:38 at CTEH Air Monitoring station #17
N 35.72609
W 78. 78.83723
FID 0.0 ppm
PID - 0.5 ppm
Ludlum 30 cpm
SPM 0.0 ppm
Multigas - All 0.0 ppm LEL 0% O_2 20.9%

:44 At CTEH Air Monitoring station #18
N 35.72598 W 078.83680
FID 0.0 ppm
PID 1.1 ppm
Ludlum 40 CPM

10/07/06

EQ Facility Fire Apex, NC

SPM 0.0 ppm
Multi-gas All Zero 0.0 ppm LEL 0% O_2 - 20.9%

Photos taken of cylinder head orientation N
N 35.72613 W 078.83694

17:56 At CTEH Air Monitoring Station 21
N 35.72457 W 78.83861
FID - 0.0 ppm
PID - 1.4 ppm
Ludlum - 20. cpm
SPM - 0.0 ppm
Multi gas - All 0.0 ppm LEL 0% O_2 - 20.9%

18:09 at CTEH Air Monitoring #15 Station
N 35.72554 W 78.83768
FID - 0.0 ppm SPM 0.0 ppm
PID - 2.2 ppm
Ludlum - 40 cpm
Multi gas All 0.0 ppm LEL 0% O_2 - 20.9%

18:15 at CTEH Air Monitoring Station #14
N 35.72538 W 078.83752
FID 0.0 ppm PID 1.6 ppm
Ludlum - 40 cpm SPM 0.0 ppm
Multigas All 0.0 ppm LEL 0% O_2 - 20.9%

10/07/06

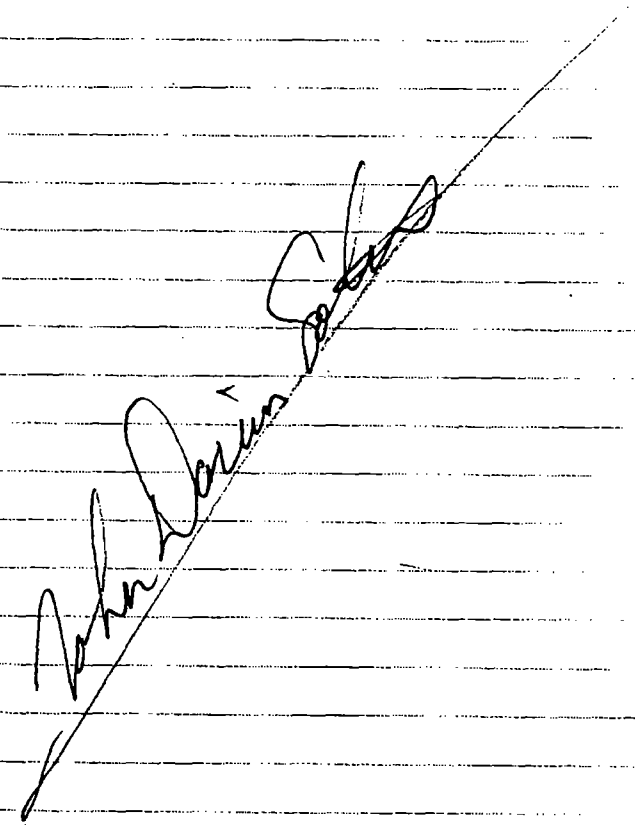
EQ Facility Fire Apex, NC

8:25 at CTEH Monitoring Station #13
N 35.72534 W 78.83692
FID 0.0 ppm SPM 0.0 ppm
PID 1.9 ppm
Ludlum 40 cpm 0.0 ppm
Multi-gas All ~~zero~~ 0 LEL 0%
O_2 - 20.9 %

8:35 at CTEH Monitoring Station #22
N 35.72462 W 78.83705
FID 0.0 ppm SPM 0.0 ppm
PID 2.0
Ludlum ~~50~~ 50 cpm
Multi-gas All 0.0 ppm 0% LEL
O_2 - 20.9

9:46 at CTEH Monitoring Station #23
N 35.72551 W 78.83516
FID -0.0 ppm SPM 0.0 ppm
PID 1.7 ppm
Ludlum 40 cpm
Multi gas All 0.0 ppm 0% LEL 20.9% O_2
took photos of Dirt Burn down gradient of EQ facility
9:00 Headed back to base Command Post

19:40 - Picked up equipment / K1 Truck moved response vechiles to adjacent parking lot with EPA MCP.
17:45 off site



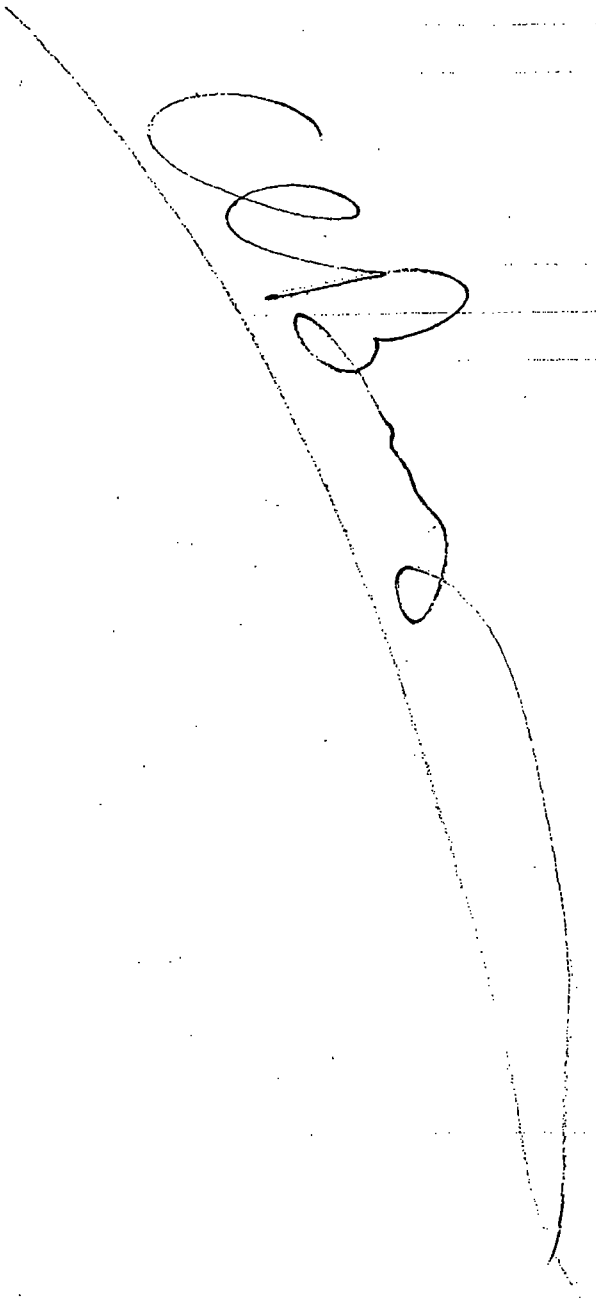


Photo log - 10/09/06

Camera #(100_###)	time	EQ catrom/location/description	Photographer
404	09:02	Investment Blvd Across from EQ facility SW	D. Soltes
405	09:05	EQ debris from Fire NE	D. Soltes
406	09:06	" E	D. Soltes
407	09:06	" NE	D. Soltes
408	09:06	" E	"
409	09:07	" E	"
410	09:07	" E	"
411	09:07	Fire Fighting Foam / chemicals E	"
412	09:08	close up of 411 E	"
413	09:08	Roof Debris NW	"
414	09:08	Drums behind facility NE	"
415	09:09	EQ debris from fire E	"
416	09:09	" E	"
417	09:09	" E	"
418	10:06	" E	"
419	10:06	" E	"
420	10:32	CTEH Air monitoring Station #15 E	"
421	10:32	EQ Debris from Fire E	"
422	10:33	" "	"
423	10:34	CTEH Air monitoring station E	"
424	10:34	EQ Debris & Burns N	"
425	10:37	Air monitoring station E	"
426	10:44	" N	"
427	10:46	" E	"

photo log Continued 10/07/06

Camera #	time	Location/orientation	photographer
18	10:49	CTEH Air monitoring E	J. Jones
29	"	" "	"
30	15:15	Fire Investigators "	J. Jones
31	15:15	" "	"
32	15:20	" "	"
33	15:21	" "	"
34	15:23	" "	"
35	15:24	" "	"
36	15:25	" "	"
37	15:40	" "	"
38	15:51	" "	"
39	"	" "	"
140	16:07	" "	"
142	16:15	uses water pump equip. S	D. Salter
143	16:15	response vechicles W	D. Salter
144	16:17	responders NE	D. Salters
145	16:19	Decon line NE	J. Jones
146	16:20	" N	"
147	16:21	" N	"
148	16:21	" N	"
149	17:27	CTEH Monitoring Station 19 N	J. Jones
150	17:34	" # 16 E	"
151	17:42	" # 17 E	"
152-456	17:46-17:48	Compressed gas cylinder E # - Sheared top.	

Camera #	time	Location/orientation	photographer
457	17:51	CTEH Air Monitoring #18 W	J. Jones
458	17:55	" # 20 E	"
459	18:02	" # 21 E	"
466	18:30	" # 15 E	"
461	18:32	" # 14 E	"
462	18:33	" # 13 SE	"
463	18:35	" # 22 NE	"
464	18:47	" # 23 S	"
465-469	18:56-19:00	465 N	"
		466 N	"
		468 W	D. Salters
		469 W	"

Earthen Berm around Stormwater Drain Down gradient of EQ Facility.

10/8/16

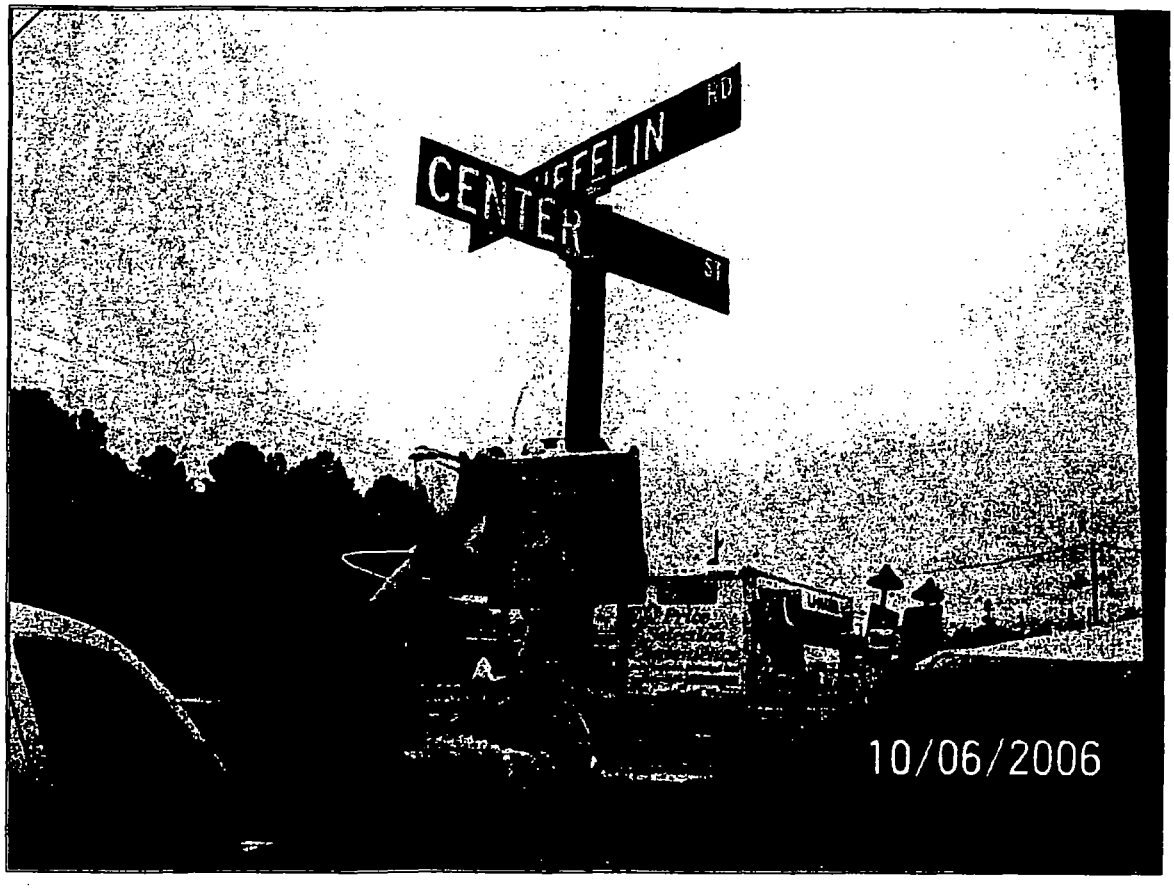
1720 START Berry monitoring Area RATES —

cation	Time	START ppm	CTEH ppm	Start P
18	1722	0.0	0.0	21" Hg
17	1725	0.0	0.0	7'
16	1728	0.0	0.0	20'
14	1730	0.0	0.0	NA
23	1735	0.0	0.0	NA
20	1740	0.0	0.0	NA
21	1745	0.0	0.0	NA
14	1755	0.0	0.0	11"
13	1756	0.0	0.0	25"
22	1757	0.0	0.0	NA
5	1800	0.0	0.0	16"

Track hoes operating near #15

END OF FIELD NOTES

APPENDIX B
PHOTOGRAPHIC LOG
(31 Pages)



OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY

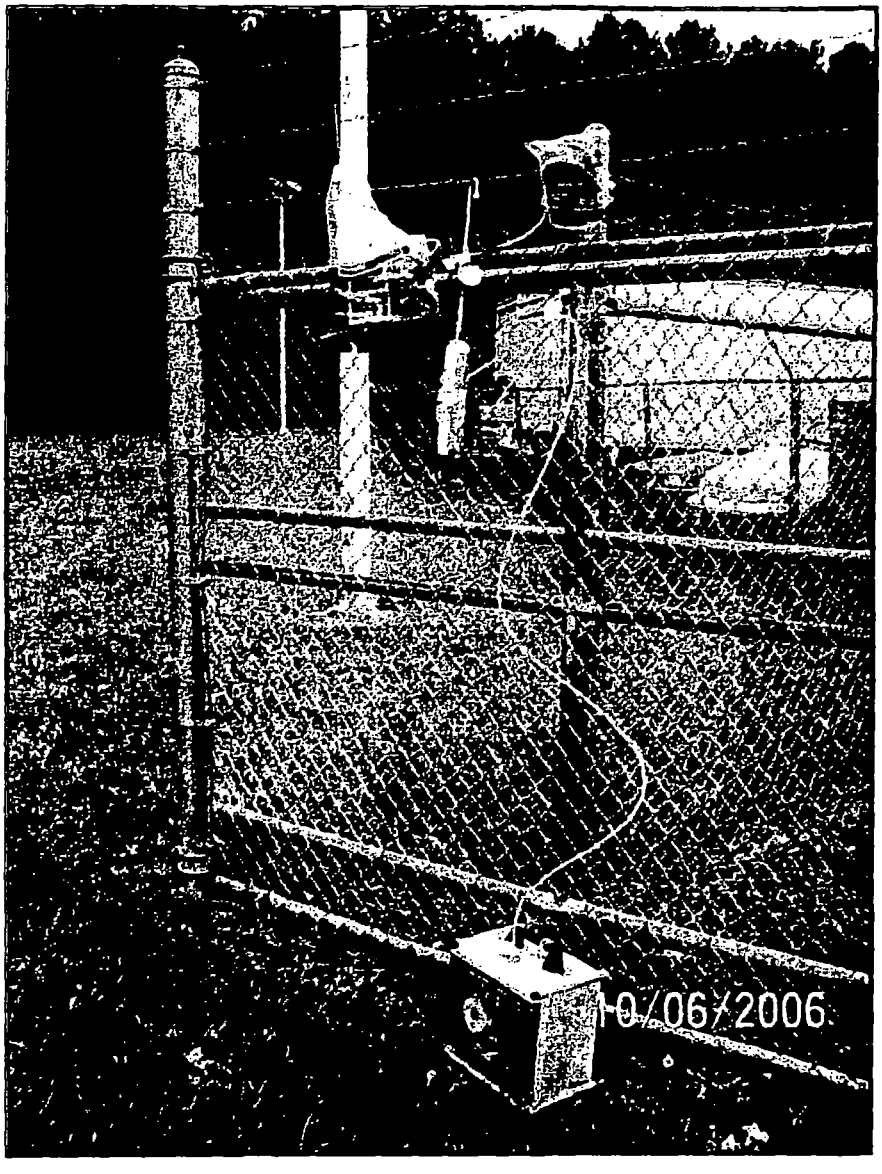
Description: CTEH air monitoring and sampling location 2 at the intersection of Center Street and Schieffelin Road, northwest of the EQ facility. START member David Reyna is monitoring for chlorine with the single-point monitor (SPM).

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 6, 2006
Orientation:	Southwest	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Jake Jones, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 3 at Industrial Boulevard east of the EQ facility. Note the air sampling pump above the AreaRAE.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 6, 2006
Orientation:	Southwest	**TDD No.:**	TTEMI-05-001-0023
Photographer:	David Reyna, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 4 at 2431 Schieffelin Road south of the EQ facility. Note the SPM for chlorine.

Location: EQ Facility Fire, Apex, NC

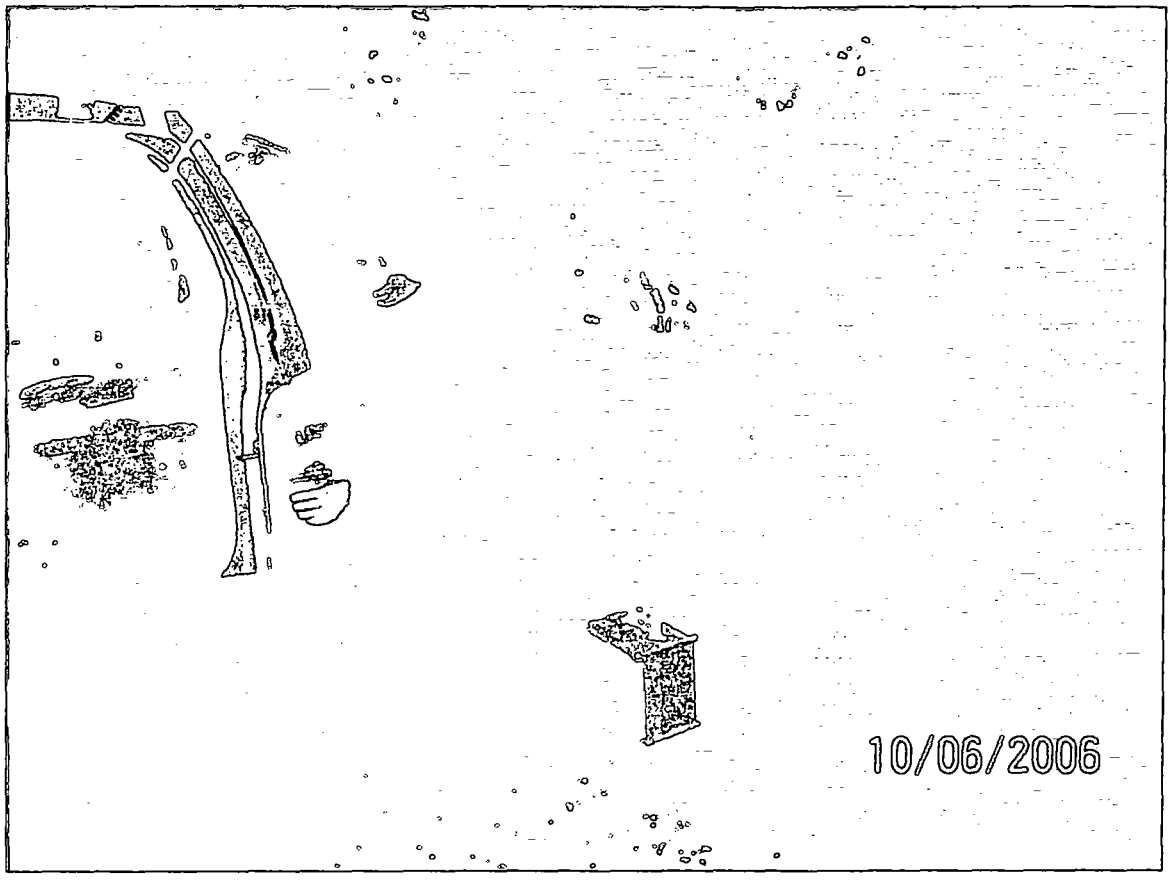
Date: October 6, 2006

Orientation: Northwest

TDD No.: TTEMI-05-001-0023

Photographer: David Reyna, Tetra Tech

Witness: Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: START member Darius Soltes recording air monitoring data at CTEH air monitoring location 5 at 1200 James Street, southwest of the EQ facility

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 6, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	David Reyna, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: START members David Reyna and Darius Soltes at CTEH air monitoring location 6 at the intersection of George Street and Briarcliff.

Location: EQ Facility Fire, Apex, NC

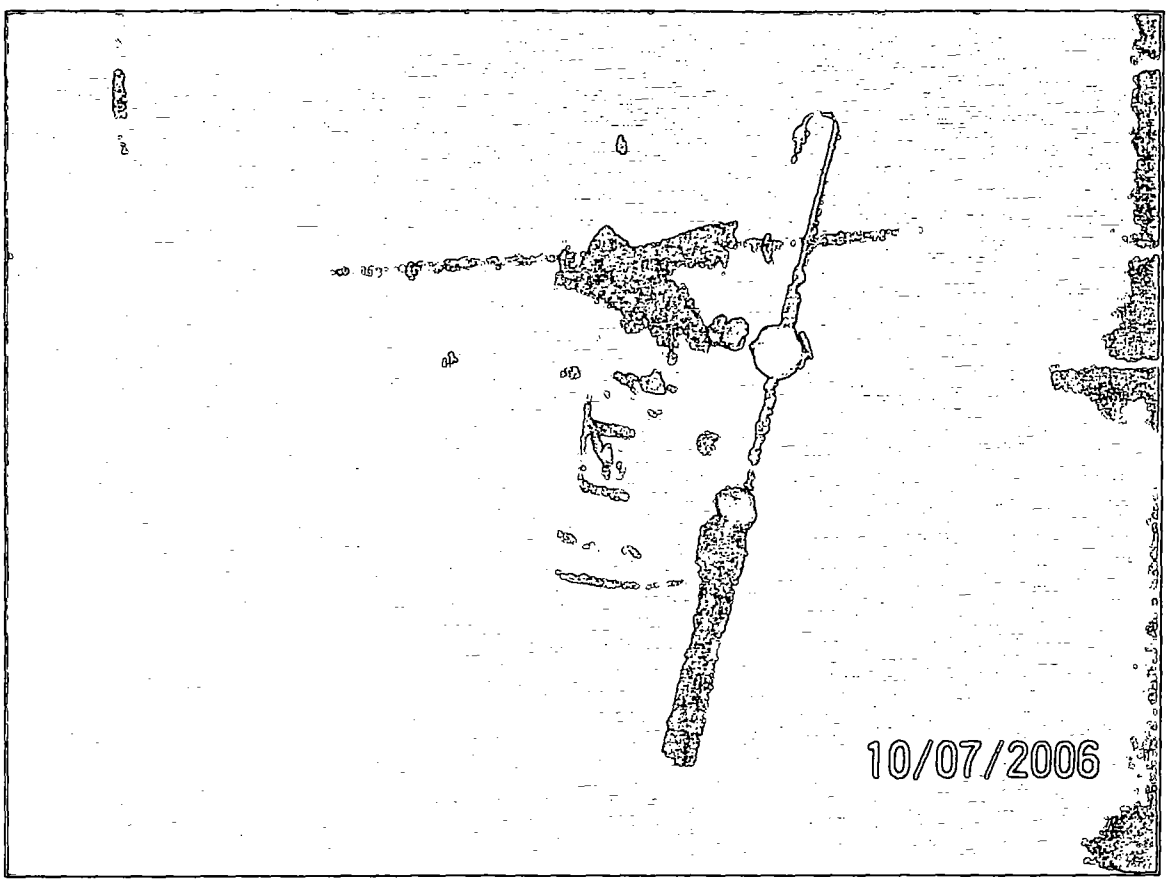
Date: October 6, 2006

Orientation: East

TDD No.: TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech

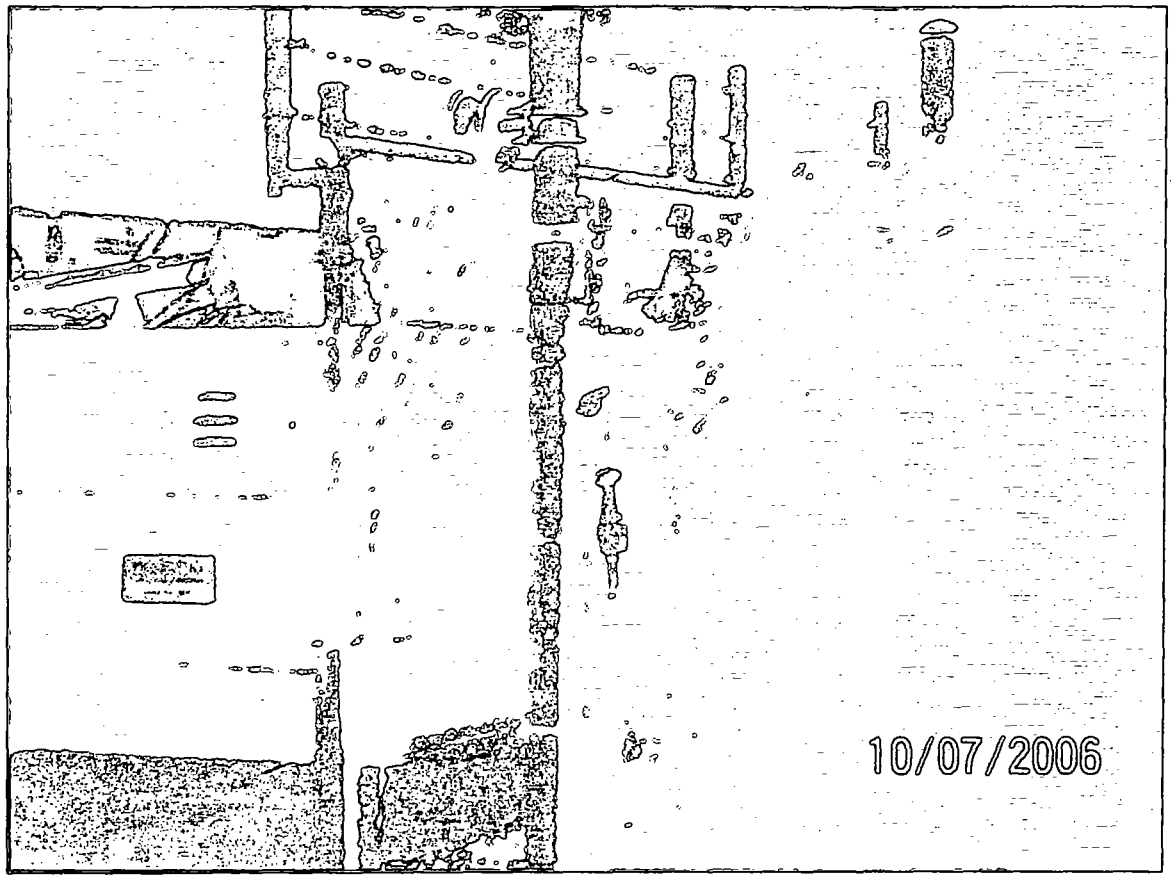
Witness: Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 13 at the southwest entry gate of the facility off Investment Boulevard.

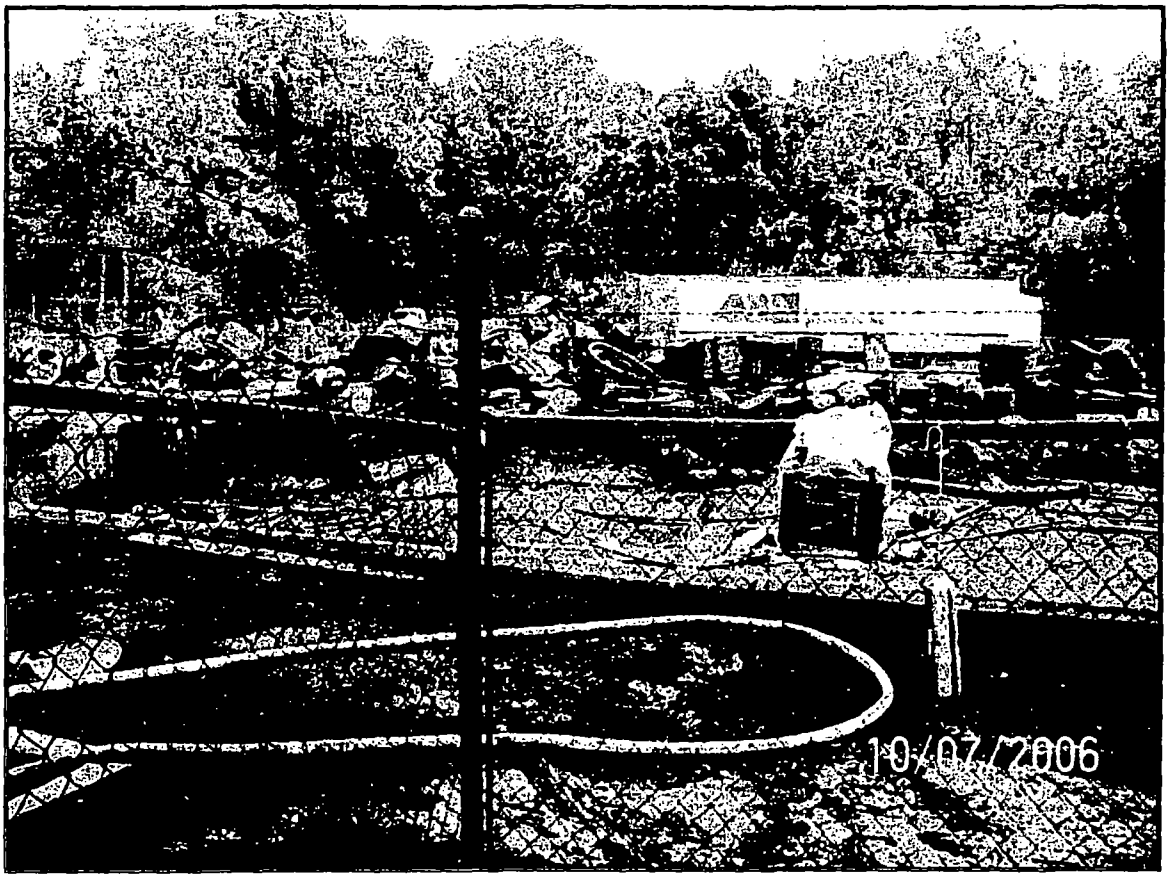
Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	Southeast	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Jake Jones, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 7
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 14 at the south entry gate of facility off Investment Boulevard.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Jake Jones, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 8
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 15 at the west loading gate of the facility.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	David Reyna, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 9
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: START member Darius Soltes recording air monitoring readings at CTEH air monitoring location 16, on the northwest facility property line.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Jake Jones, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 10
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 17 north of the facility along the tree line.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: East **TDD No.:** TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 11
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 18 northeast of the facility on the fenceline.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: West **TDD No.:** TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech

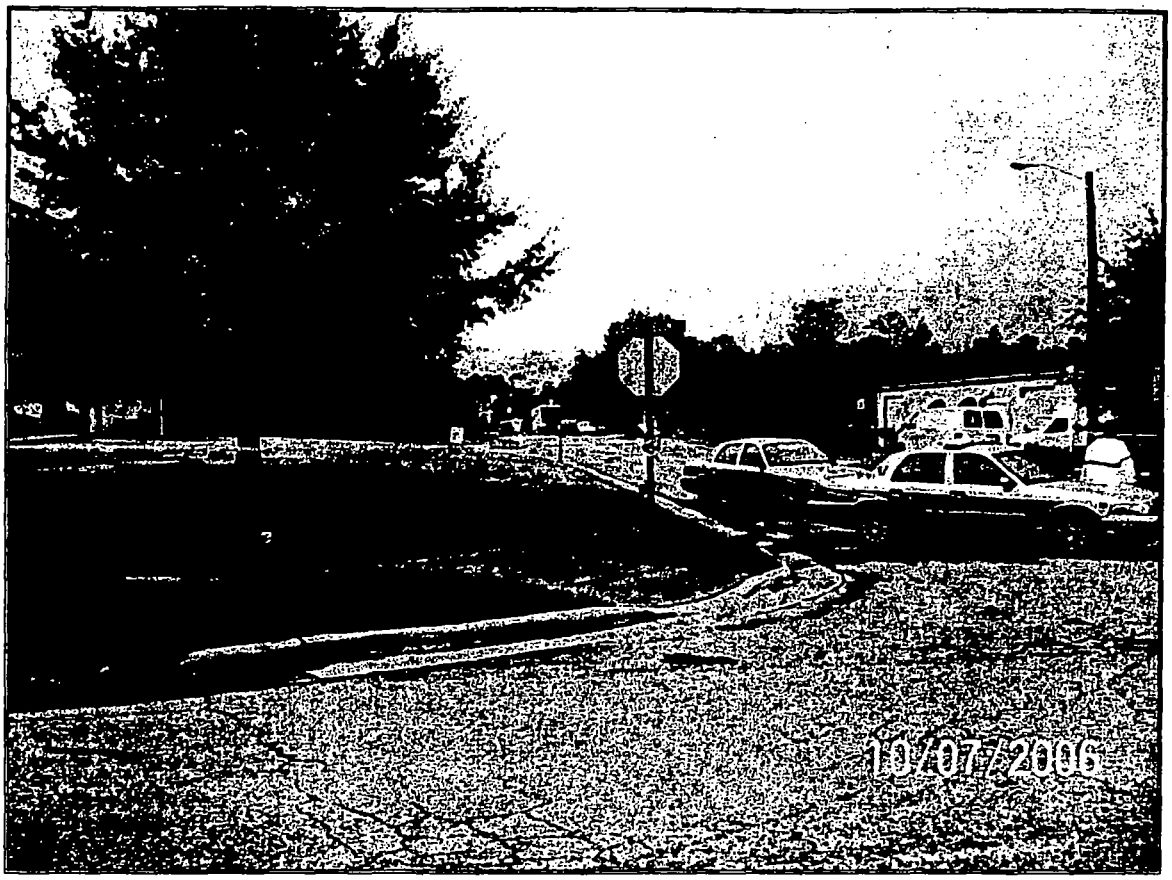
OFFICIAL PHOTOGRAPH NO. 12
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 19 off Schieffelin Road northwest of the facility

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: North **TDD No.:** TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 13
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 20 at the intersection of Investment Boulevard and Schieffelin Road west of the facility. The monitor is affixed to the stop sign.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Jake Jones, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 14
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 21 behind Capitol Coffee Systems, Inc., at 1000 Investment Boulevard, southwest of the facility.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	East	**TDD No.:**	TTEMI-05-001-0023
Photographer:	David Reyna, Tetra Tech	**Witness:**	Darius Soltes, Tetra Tech

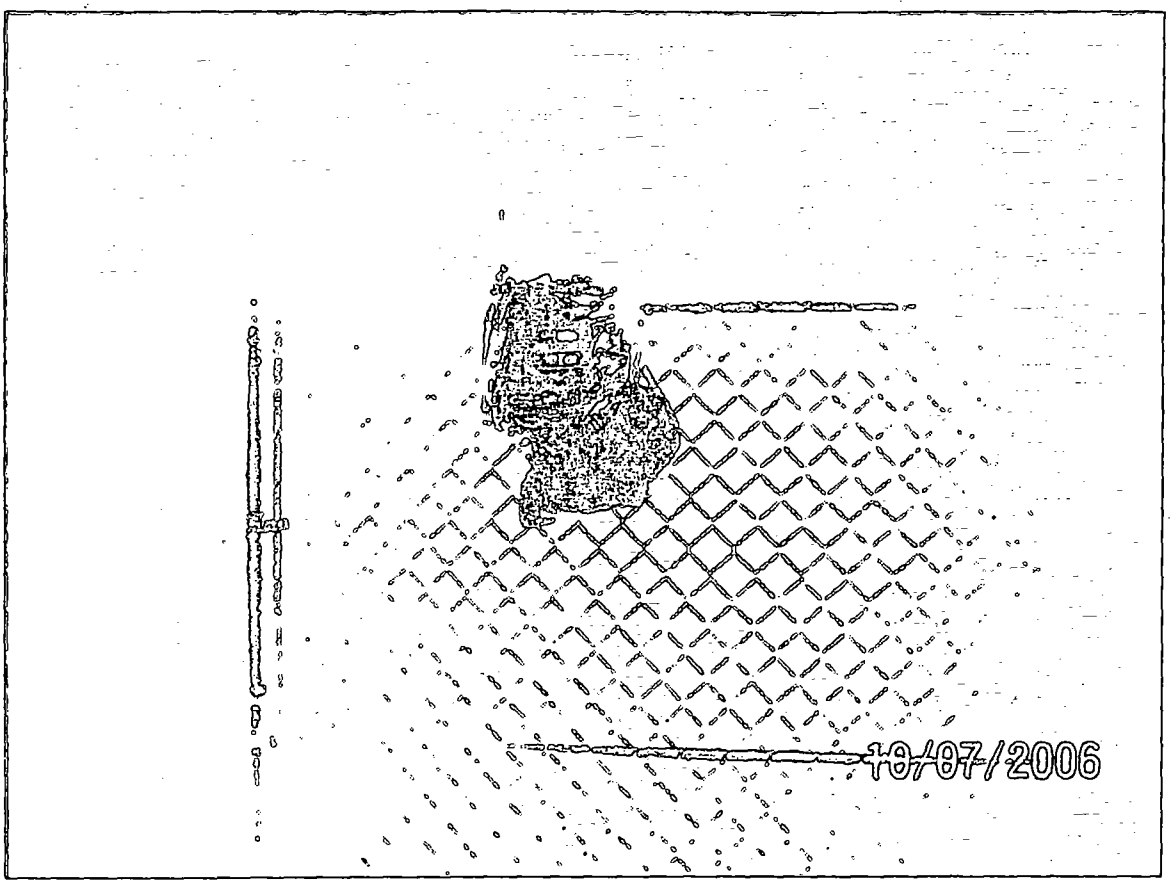
OFFICIAL PHOTOGRAPH NO. 15
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 22 on Investment Boulevard southeast of the facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northeast **TDD No.:** TTEMI-05-001-0023

Photographer: David Reyna, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



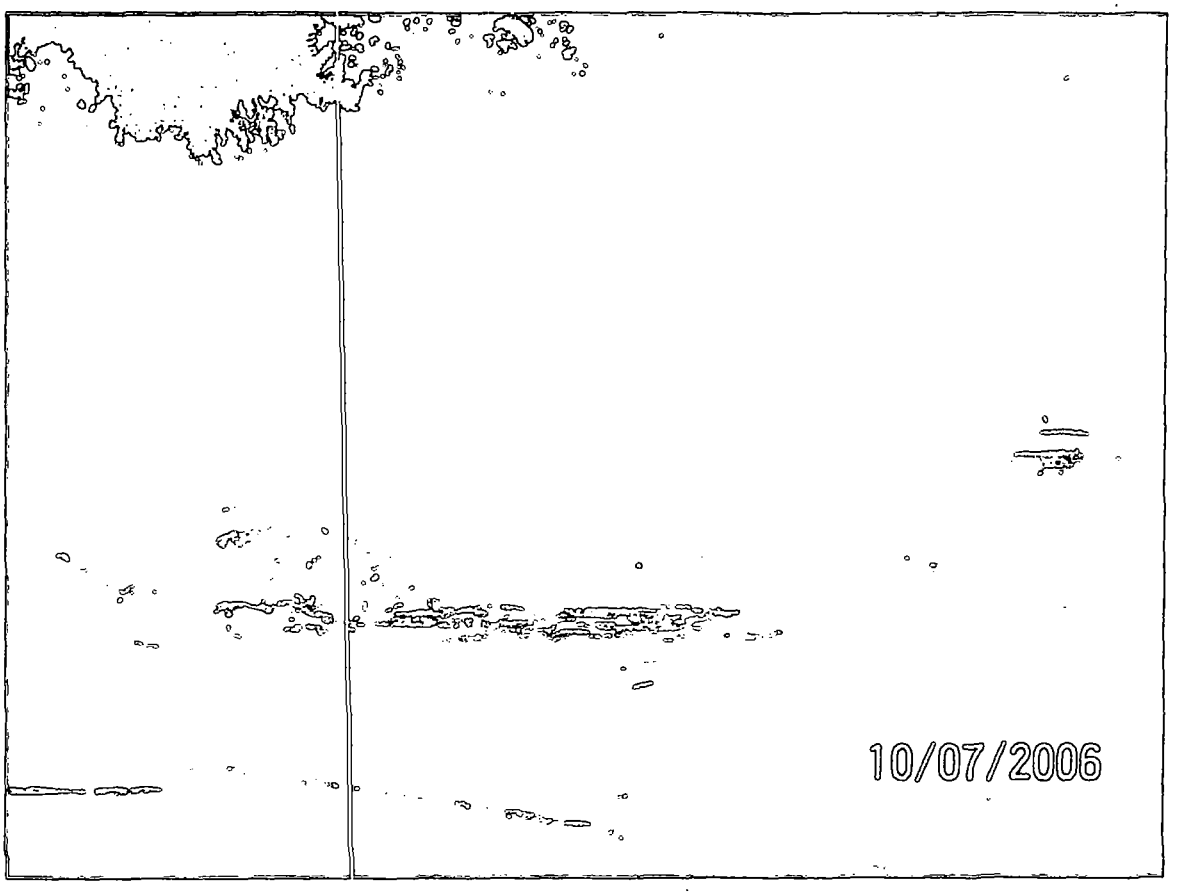
OFFICIAL PHOTOGRAPH NO. 16
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: CTEH air monitoring location 23 on Investment Boulevard east of the facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: South **TDD No.:** TTEMI-05-001-0023

Photographer: David Reyna, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



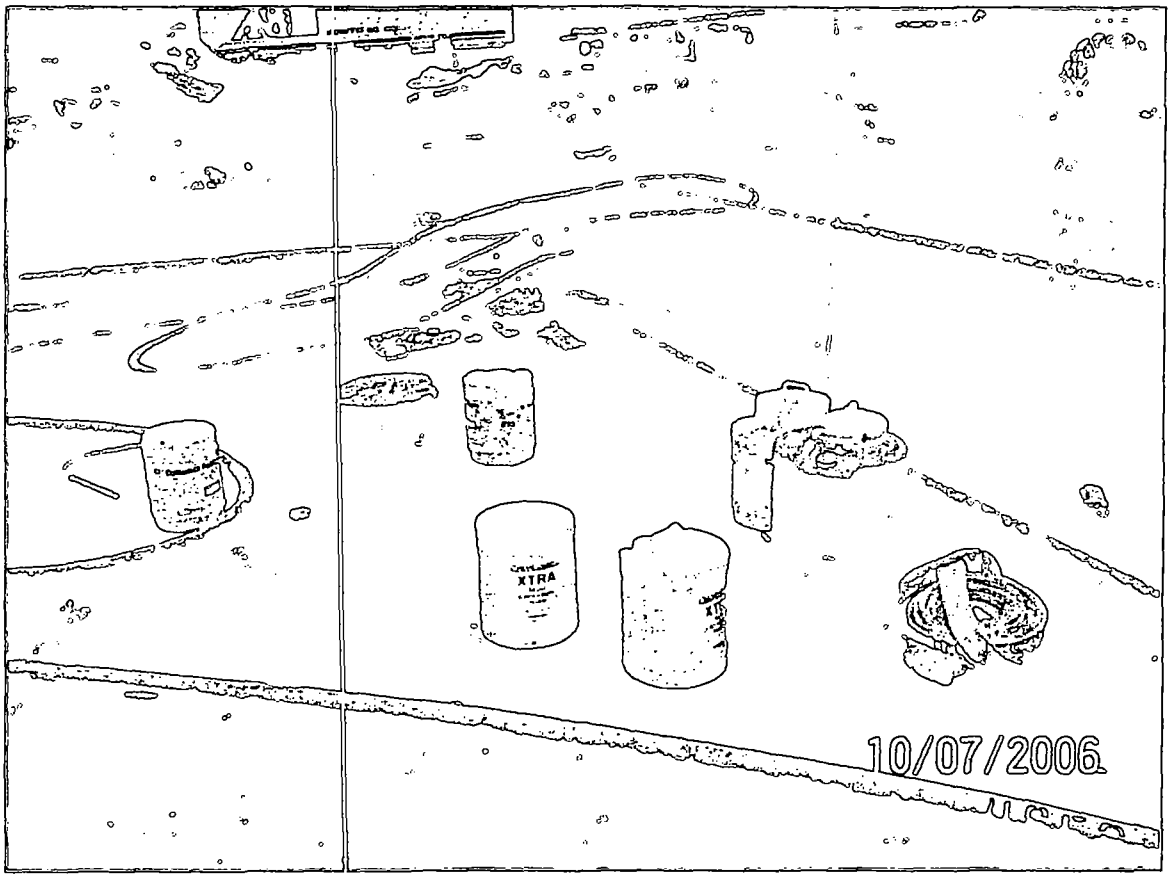
OFFICIAL PHOTOGRAPH NO. 17
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Debris and smoldering containers at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northeast **TDD No.:** TTEMI-05-001-0023

Photographer: David Reyna, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



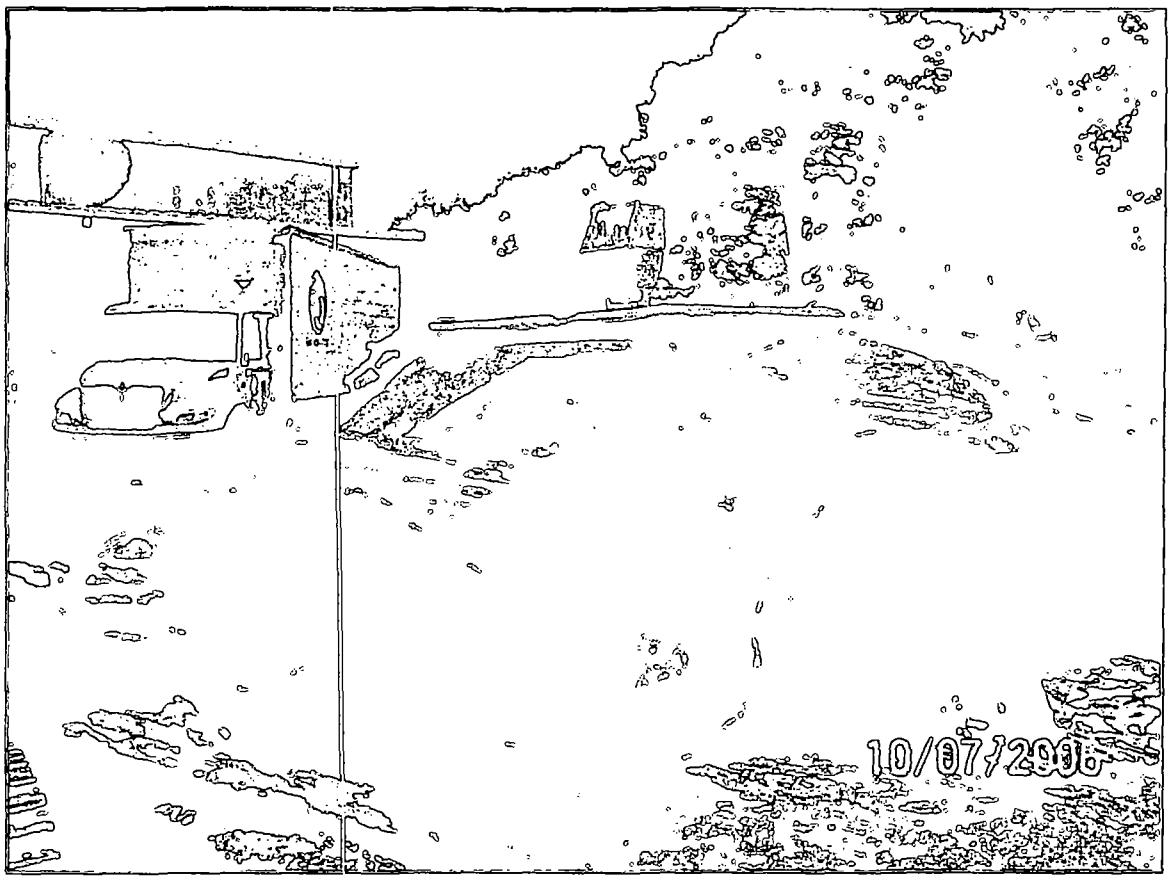
OFFICIAL PHOTOGRAPH NO. 18
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Fire fighting chemicals, foam, and hoses staged adjacent to the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: North **TDD No.:** TTEMI-05-001-0023

Photographer: Darius Soltes, Tetra Tech **Witness:** Jake Jones, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 19
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Remains of the storage facility roof removed during fire fighting operations.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northwest **TDD No.:** TTEMI-05-001-0023

Photographer: Darius Soltes, Tetra Tech **Witness:** David Reyna, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 20
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: 55-Gallon drums staged adjacent to the EQ storage warehouse.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	North	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	David Reyna, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 21
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Small containers and other debris at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: East **TDD No.:** TTEMI-05-001-0023

Photographer: Darius Soltes, Tetra Tech **Witness:** David Reyna, Tetra Tech

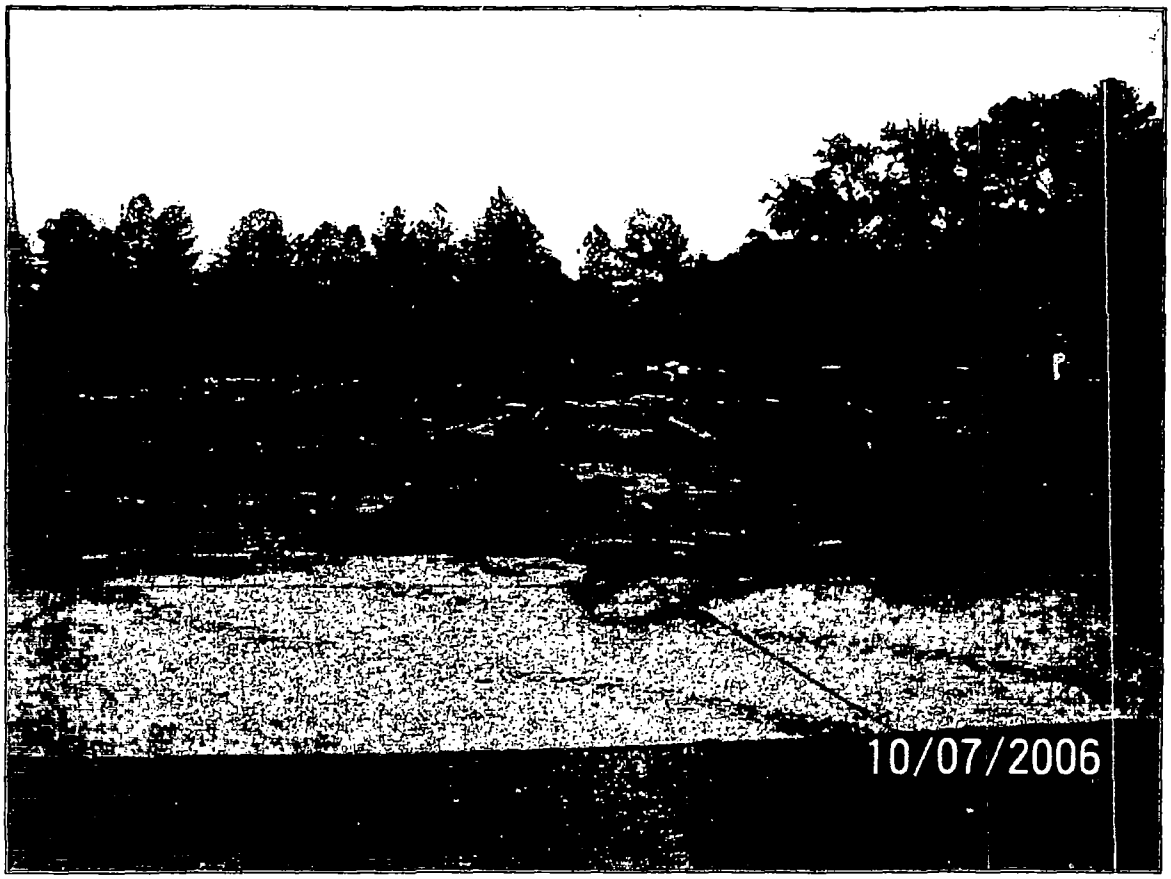
OFFICIAL PHOTOGRAPH NO. 22
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: 55-Gallon drums and other debris at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: East **TDD No.:** TTEMI-05-001-0023

Photographer: Darius Soltes, Tetra Tech **Witness:** David Reyna, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 23
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Earthen berms were created to prevent water runoff.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: North **TDD No.:** TTEMI-05-001-0023

Photographer: Darius Soltes, Tetra Tech **Witness:** David Reyna, Tetra Tech

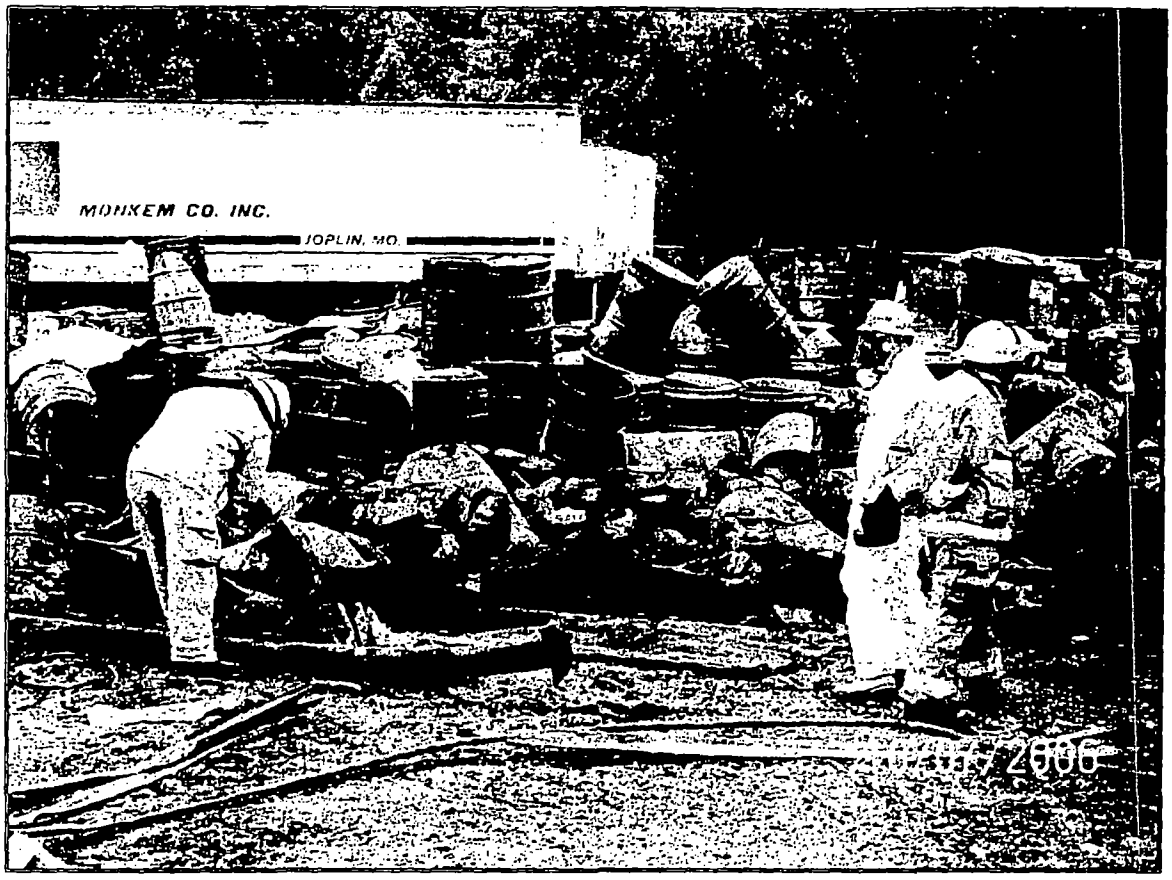
OFFICIAL PHOTOGRAPH NO. 24
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Fire investigation team inspecting debris at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northeast **TDD No.:** TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 25
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Fire investigators inspecting 55-gallon drums at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: South **TDD No.:** TTEMI-05-001-0023

Photographer: David Reyna, Tetra Tech **Witness:** Darius Soltes, Tetra Tech

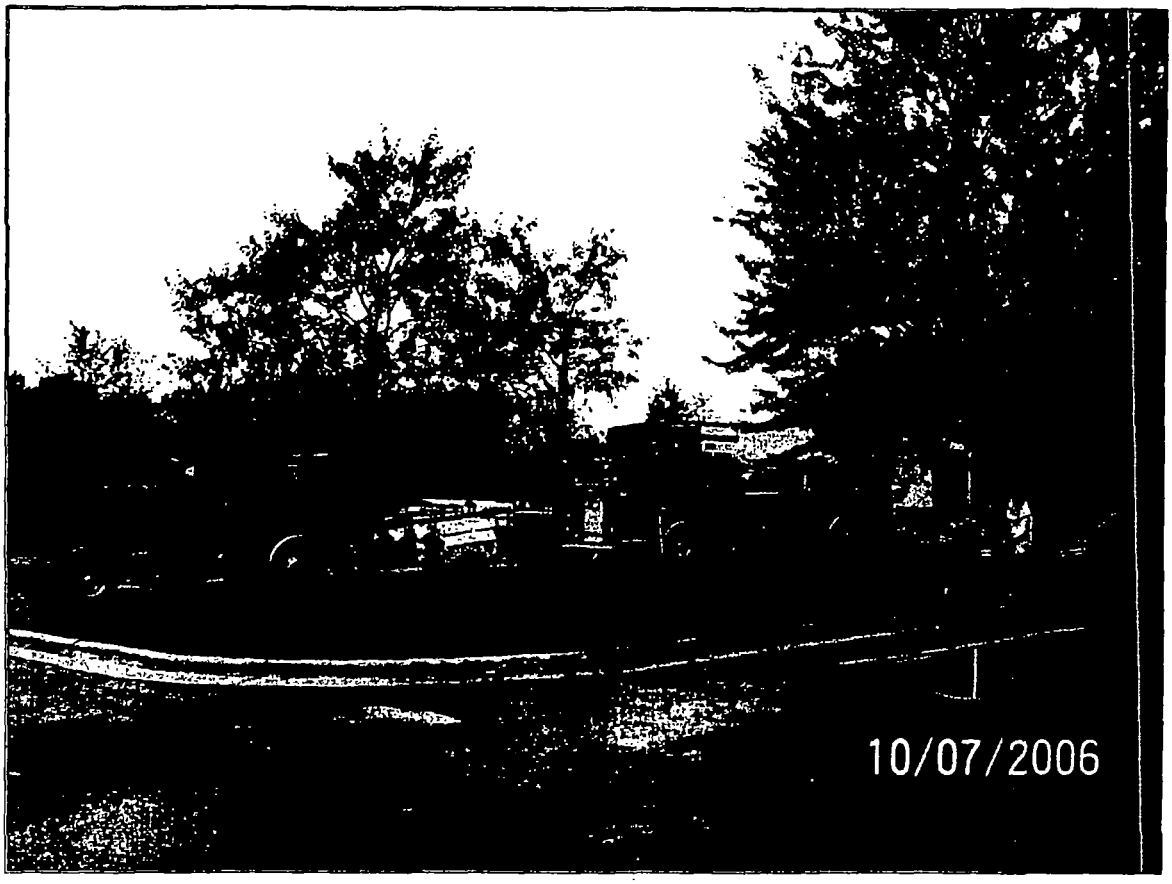
OFFICIAL PHOTOGRAPH NO. 26
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Fire investigation team inspecting debris at the EQ storage facility.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northeast **TDD No.:** TTEMI-05-001-0023

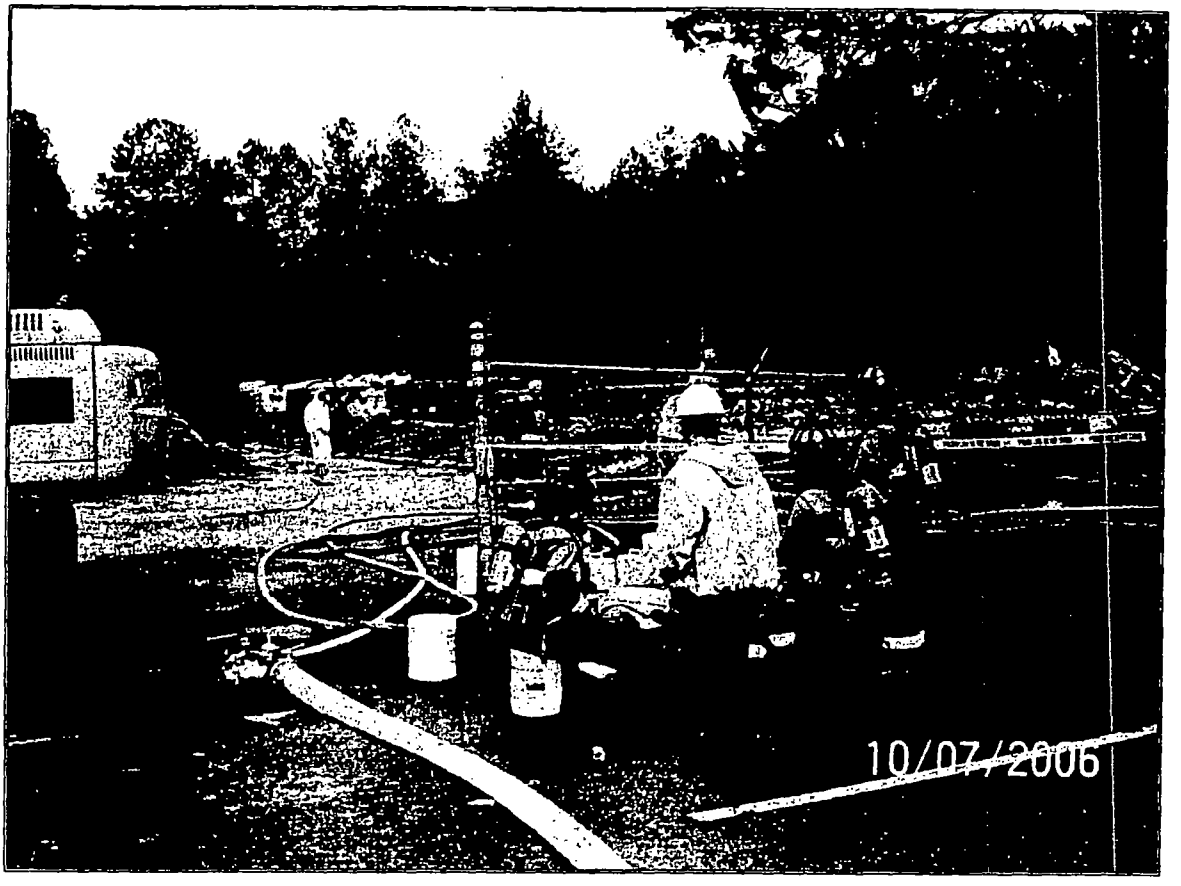
Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 27
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Emergency vehicles and fire fighters standing by for rescue during investigator entry. Note the decontamination line on the right.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	Southwest	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	Jake Jones, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 28
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: The rescue team standing by during the fire investigator entry to determine the possible cause of the fire.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	Northeast	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	Jake Jones, Tetra Tech

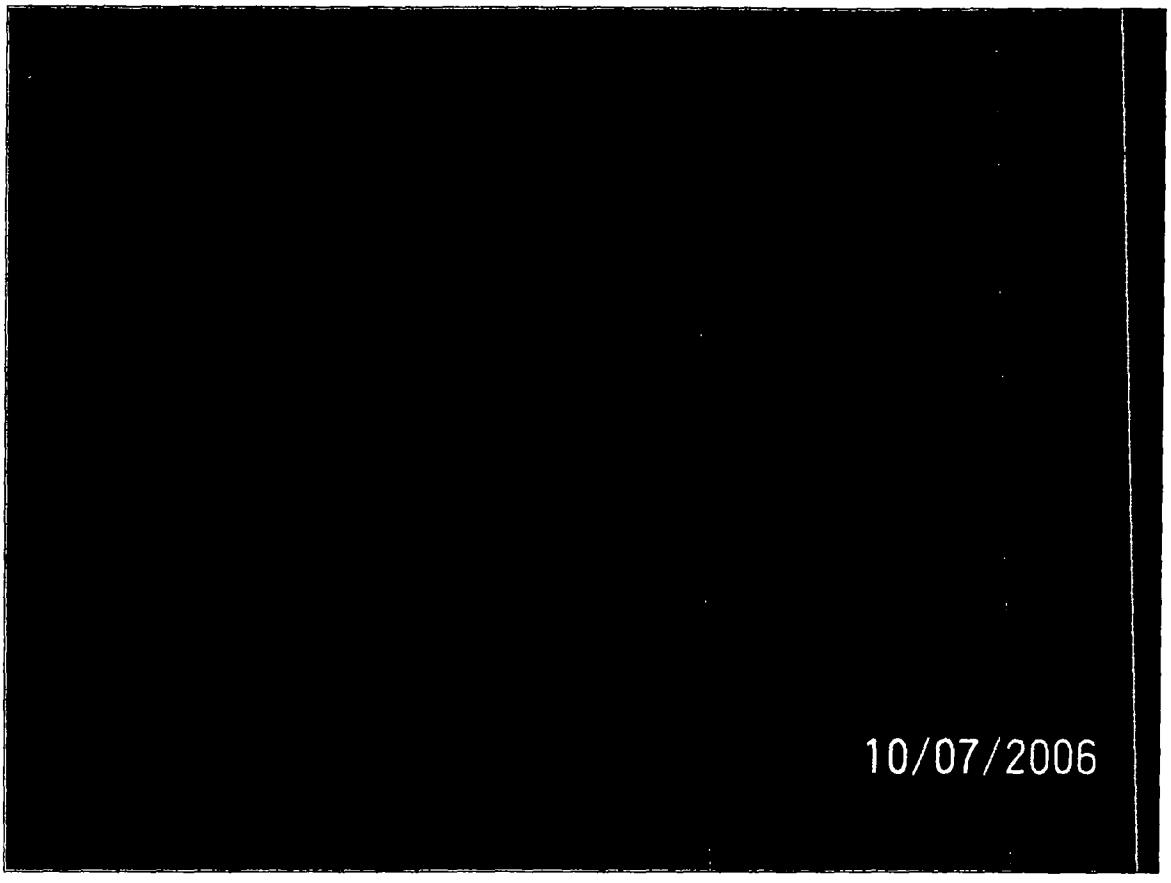
OFFICIAL PHOTOGRAPH NO. 29
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Fire fighters in decontamination line after performing fire investigation activities.

Location: EQ Facility Fire, Apex, NC **Date:** October 7, 2006

Orientation: Northeast **TDD No.:** TTEMI-05-001-0023

Photographer: Jake Jones, Tetra Tech **Witness:** Darius Soltes, Tetra Tech



OFFICIAL PHOTOGRAPH NO. 30
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Earthen berm restricting runoff into the storm sewer and the nearby creek downgradient of the EQ storage facility.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	North	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	Jake Jones, Tetra Tech

OFFICIAL PHOTOGRAPH NO. 31
U.S. ENVIRONMENTAL PROTECTION AGENCY

Description: Earthen berm restricting runoff into the storm sewer and the nearby creek, downgradient of the EQ storage facility.

Location:	EQ Facility Fire, Apex, NC	**Date:**	October 7, 2006
Orientation:	Northwest	**TDD No.:**	TTEMI-05-001-0023
Photographer:	Darius Soltes, Tetra Tech	**Witness:**	Jake Jones, Tetra Tech

APPENDIX C
TABLE OF WITNESSES
(4 Pages)

TABLE OF WITNESSES

Mr. Chris Russell, On-Scene Coordinator
U.S. Environmental Protection Agency (USEPA) Region 4
61 Forsyth Street, S.W.
Atlanta, GA 30303-8960
russell.chris@epa.gov
(404) 562-8855

Mr. Ted Walden, On-Scene Coordinator
USEPA Region 4
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Atlanta, GA 30303-8960
walden.ted@epa.gov
(404) 562-8752

Dr. James Webster, On-Scene Coordinator
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Commander Larry Cseh,
Department of Health and Human Services
Agency for Toxic Substances & Disease Registry
Emergency Responding Program
(404) 639 3311

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U.S. Chemical Safety and Hazard Investigation Board
Office of Investigations
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Washington, DC 20037-1809
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michael.brailsford@ncmail.net
(919) 270-3507

Mr. Ted Cashion
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Division of Waste Management
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Ms. Lori Cherry
NCDENR
Department of Air Quality
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Division of Water Quality
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Mr. Jarwin Hester
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NCDENR
Division of Water Quality
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Raleigh, NC 27609
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(919) 733-5083 x 548

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Apex, North Carolina
mark.haraway@apexnc.org
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Mr. Chuck Berry, Project Manager
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1955 Evergreen Blvd
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Mr. Scott Kluska, National Emergency Response Manager
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Ypsilanti, Michigan 48198
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Mr. Scott Maris, Vice President Regulatory Affairs
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Mr. Steve Resendez, Compliance Coordinator
Regulatory Affairs Department
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Center for Toxicology and Environmental Health (CTEH)
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Little Rock, Arkansas 72201
ngray@cteh.com
(501) 614-2834

Dr. Paul Nony, Ph. D., Project Toxicologist and Manager of Toxicology
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Little Rock, Arkansas 72201
pnony@cteh.com
(501) 614-2834

Mr. John Mark Franklin, Sr. Project Manager
United States Environmental Services, L.L.C. (USES)
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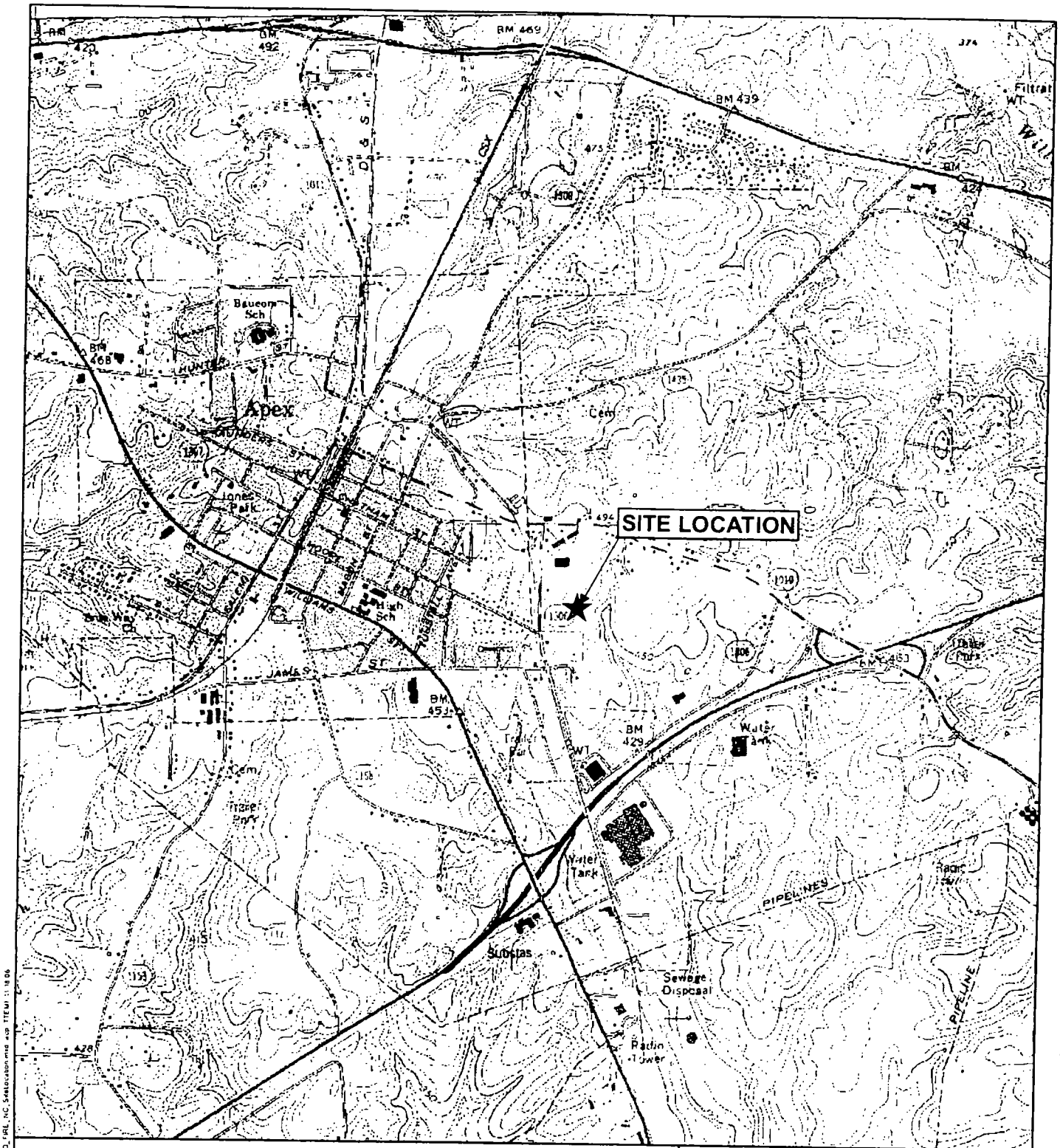
jfranklin@usesgroup.com
(601) 372-3232

Mr. George Malvaney, Vice President of Emergency Operations, Regional Manager
USES
1075 Mendell Davis Drive
Jackson, Mississippi 39272
gmalvaney@usesgroup.com
(601) 372-3232

APPENDIX D
FIGURES
(9 Pages)



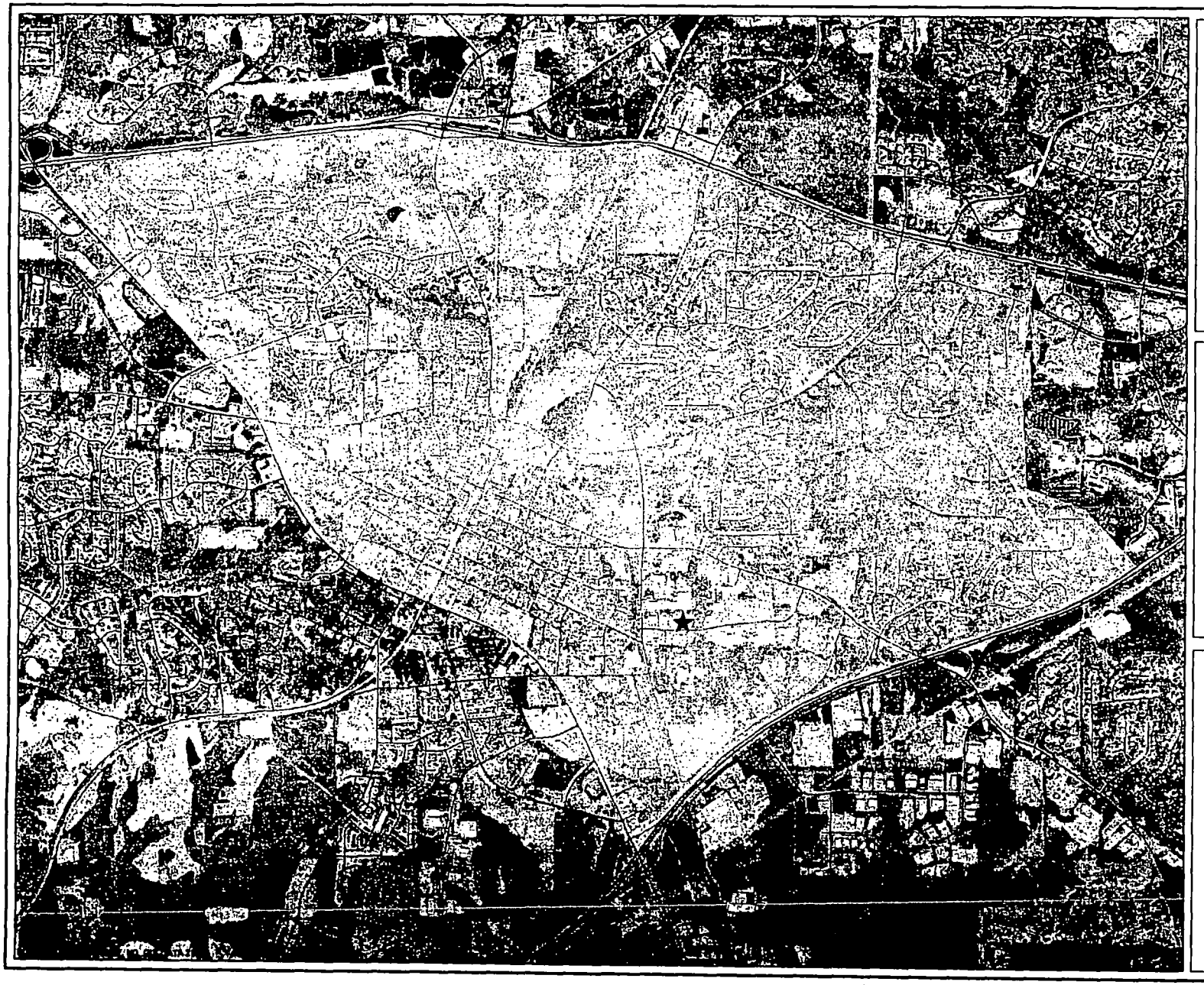
SOURCE: WIKIPEDIA, GFDL LICENSE APEX, NORTH CAROLINA, 1988

United States Environmental Protection Agency

APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

FIGURE 1
SITE LOCATION MAP

Tetra Tech, Inc.

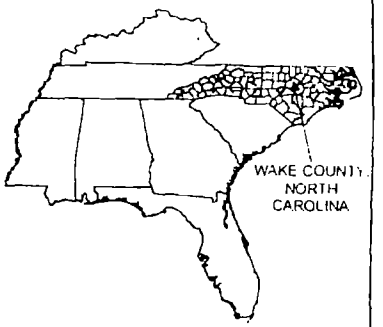


LEGEND

- EQ FACILITY
- COMMAND POST
- STREETS

N

0 2,000 4,000 Feet



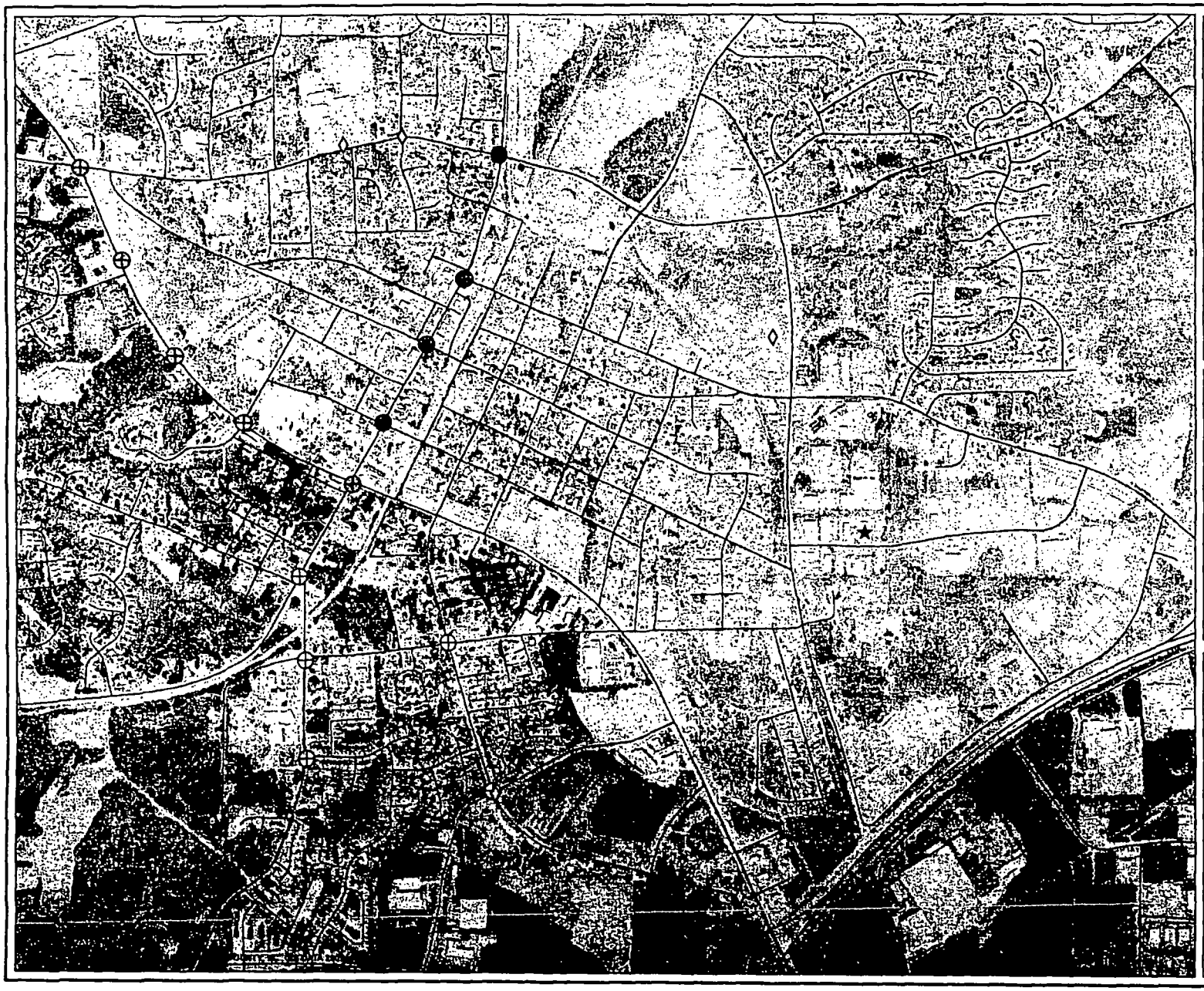
United States Environmental Protection Agency

APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

FIGURE 2
EVACUATION ZONE

UPDATED: 11-28-06

Tetra Tech, Inc.

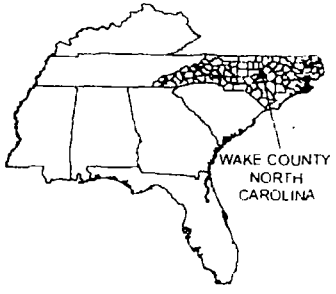


LEGEND

- EQ FACILITY
- TEDLAR BAG SAMPLING LOCATION
- AREARAE LAYOUT 1
- AREARAE LAYOUT 2
- AREARAE LAYOUT 3
- STREETS
- EVACUATION ZONE

N

0 500 1,000 1,500 Feet



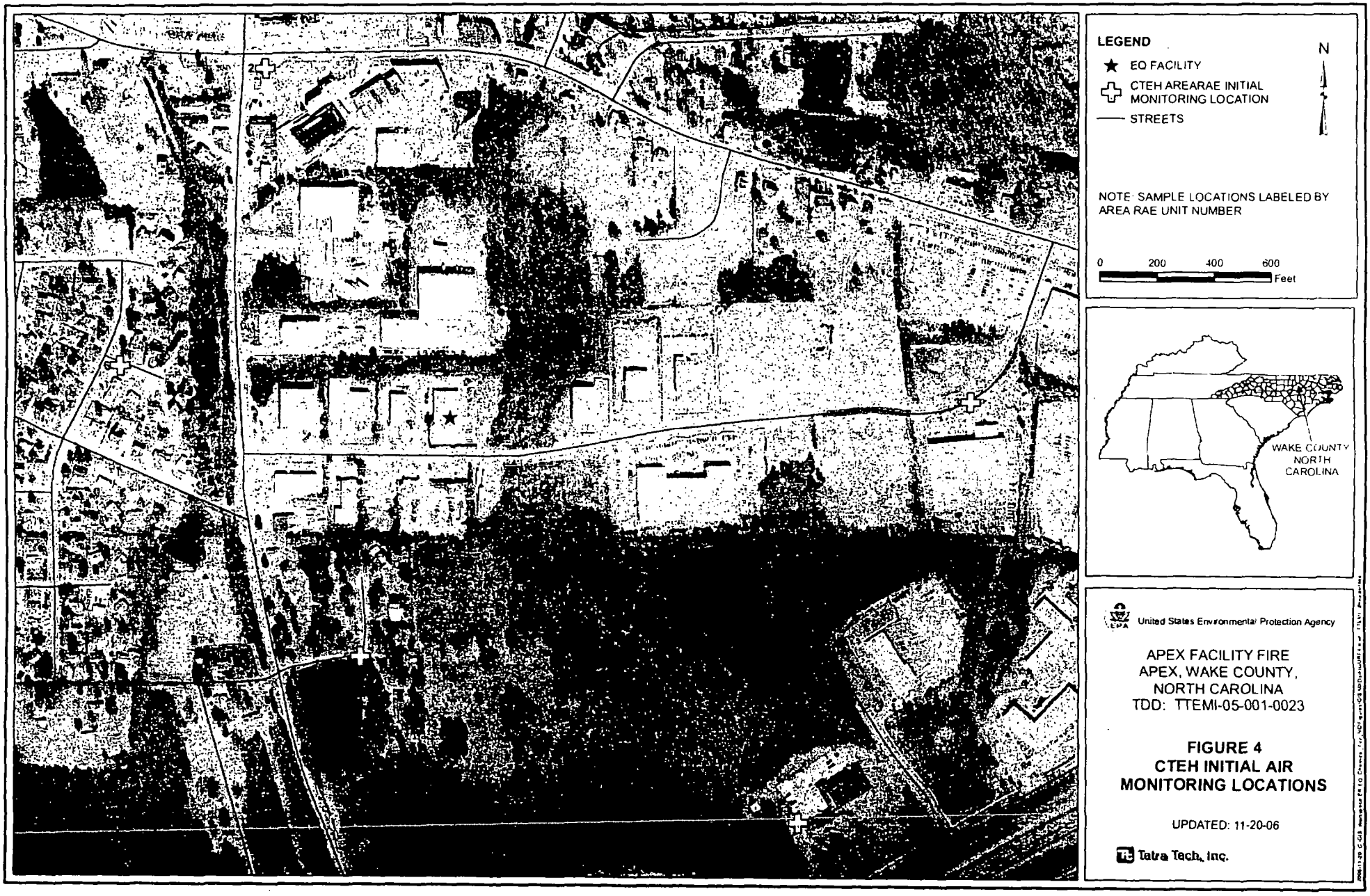
United States Environmental Protection Agency

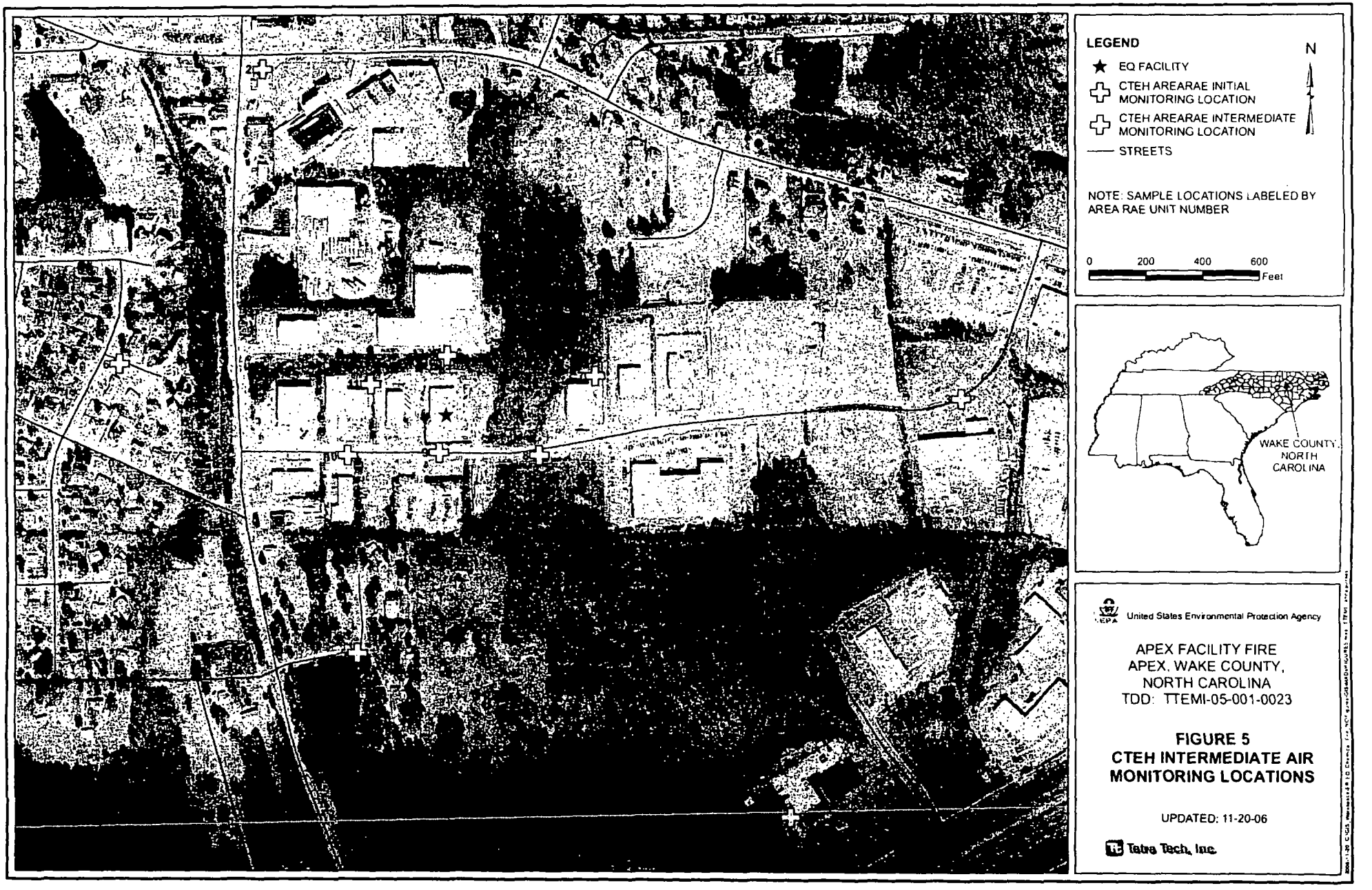
APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

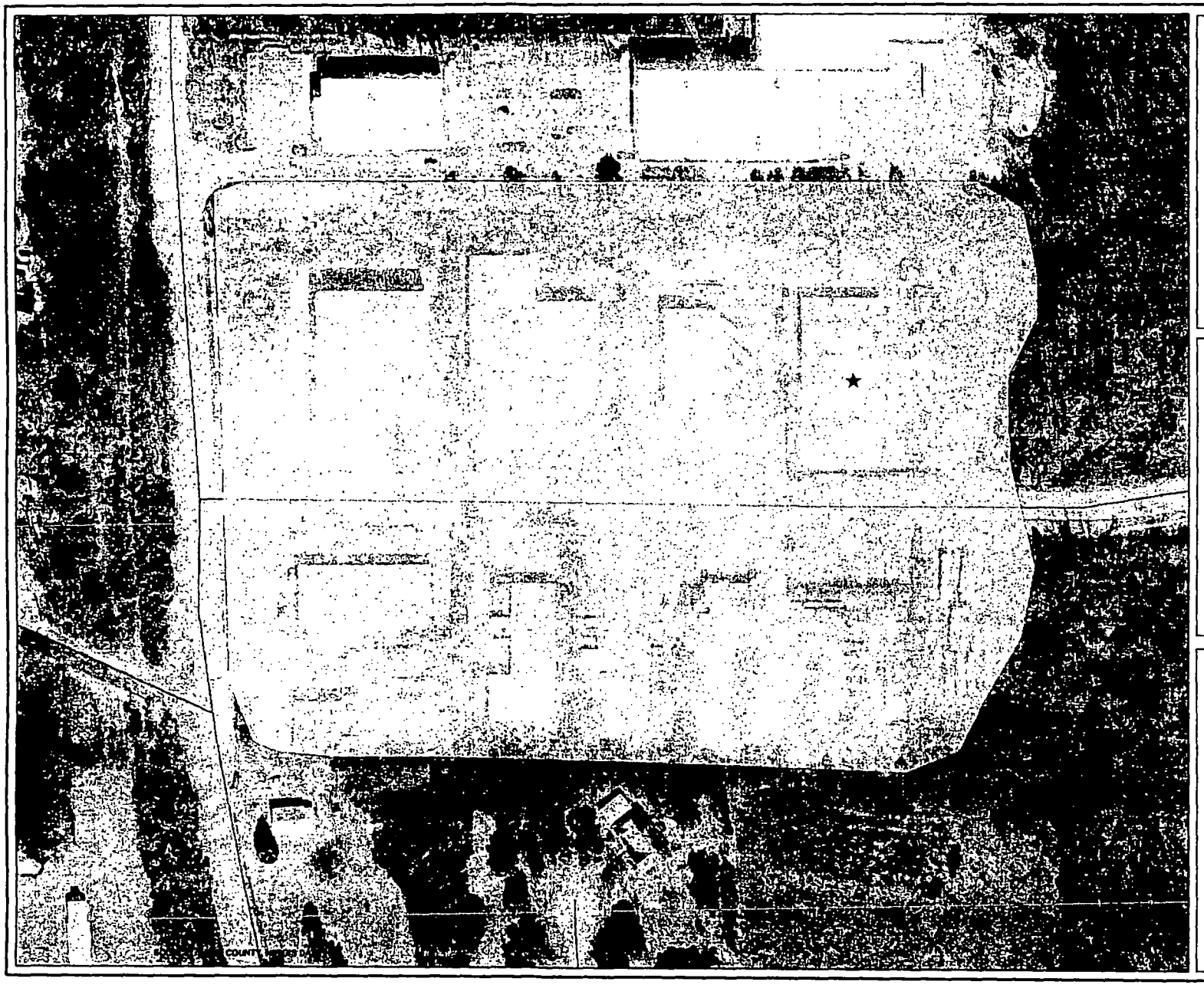
FIGURE 3
NCDENR DAQ ATAST
AIR MONITORING AND
SAMPLING LOCATIONS

UPDATED. 11-20-06

Tetra Tech, Inc.


LEGEND
EQ FACILITY
CTEH AREARAE INITIAL MONITORING LOCATION
STREETS
N
NOTE: SAMPLE LOCATIONS LABELED BY AREA RAE UNIT NUMBER
0
200
400
600
Feet
WAKE COUNTY
NORTH
CAROLINA
United States Environmental Protection Agency
APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023
FIGURE 4
CTEH INITIAL AIR
MONITORING LOCATIONS
UPDATED: 11-20-06
Tetra Tech, Inc.


LEGEND
EQ FACILITY
CTEH AREARAE INITIAL MONITORING LOCATION
CTEH AREARAE INTERMEDIATE MONITORING LOCATION
STREETS
N
NOTE: SAMPLE LOCATIONS LABELED BY AREA RAE UNIT NUMBER
0
200
400
600
Feet
WAKE COUNTY, NORTH CAROLINA
United States Environmental Protection Agency
APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023
FIGURE 5
CTEH INTERMEDIATE AIR MONITORING LOCATIONS
UPDATED: 11-20-06
Tetra Tech, Inc.



LEGEND

- ★ EQ FACILITY
- STREETS
- REDUCED EXCLUSION ZONE ON OCTOBER 7, 2006

N

0 100 200 Feet

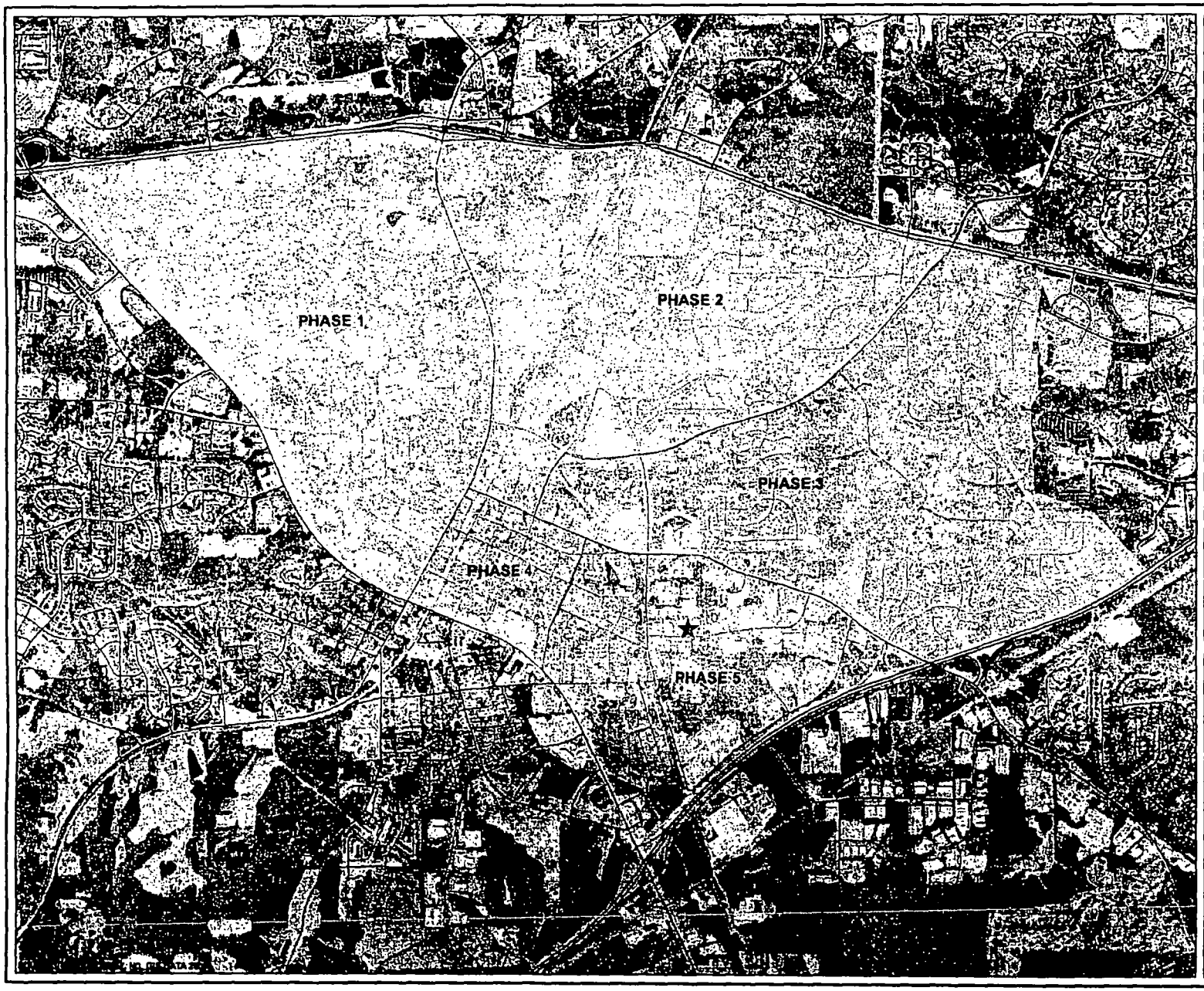
United States Environmental Protection Agency

APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

FIGURE 6
FINAL EXCLUSION ZONE
LOCATION MAP

UPDATED: 11-20-06

Tetra Tech, Inc.



LEGEND

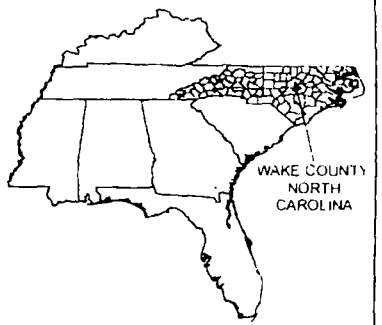
COMMAND POST

EVACUATION PHASES

- PHASE 1
- PHASE 2
- PHASE 3
- PHASE 4
- PHASE 5
- STREETS

N

0 2,000 4,000 Feet



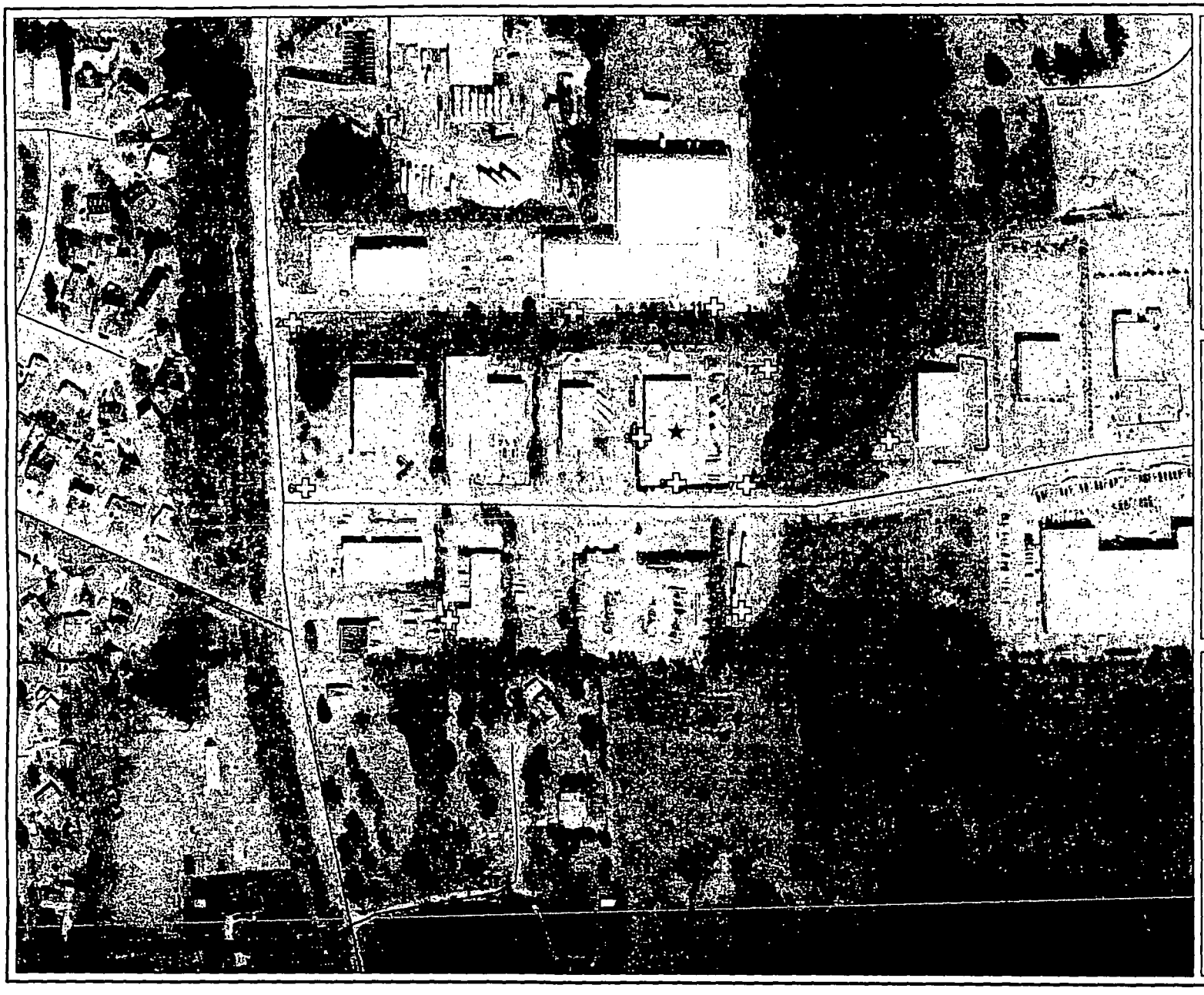
United States Environmental Protection Agency

APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

FIGURE 7
RE-ENTRY ZONES

UPDATED: 11-28-06

Tetra Tech, Inc.



LEGEND

N

★ EQ FACILITY

AREARAE SAMPLING LOCATIONS

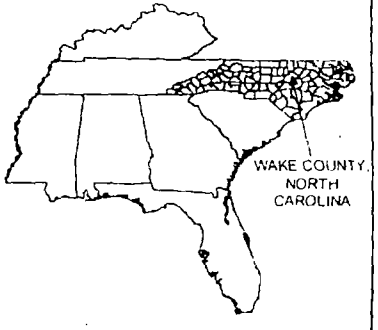
EQ FENCELINE

EQ EXTENDED FENCELINE

STREETS

Note: Sample locations are labeled by unit number

0 150 300 450 Feet



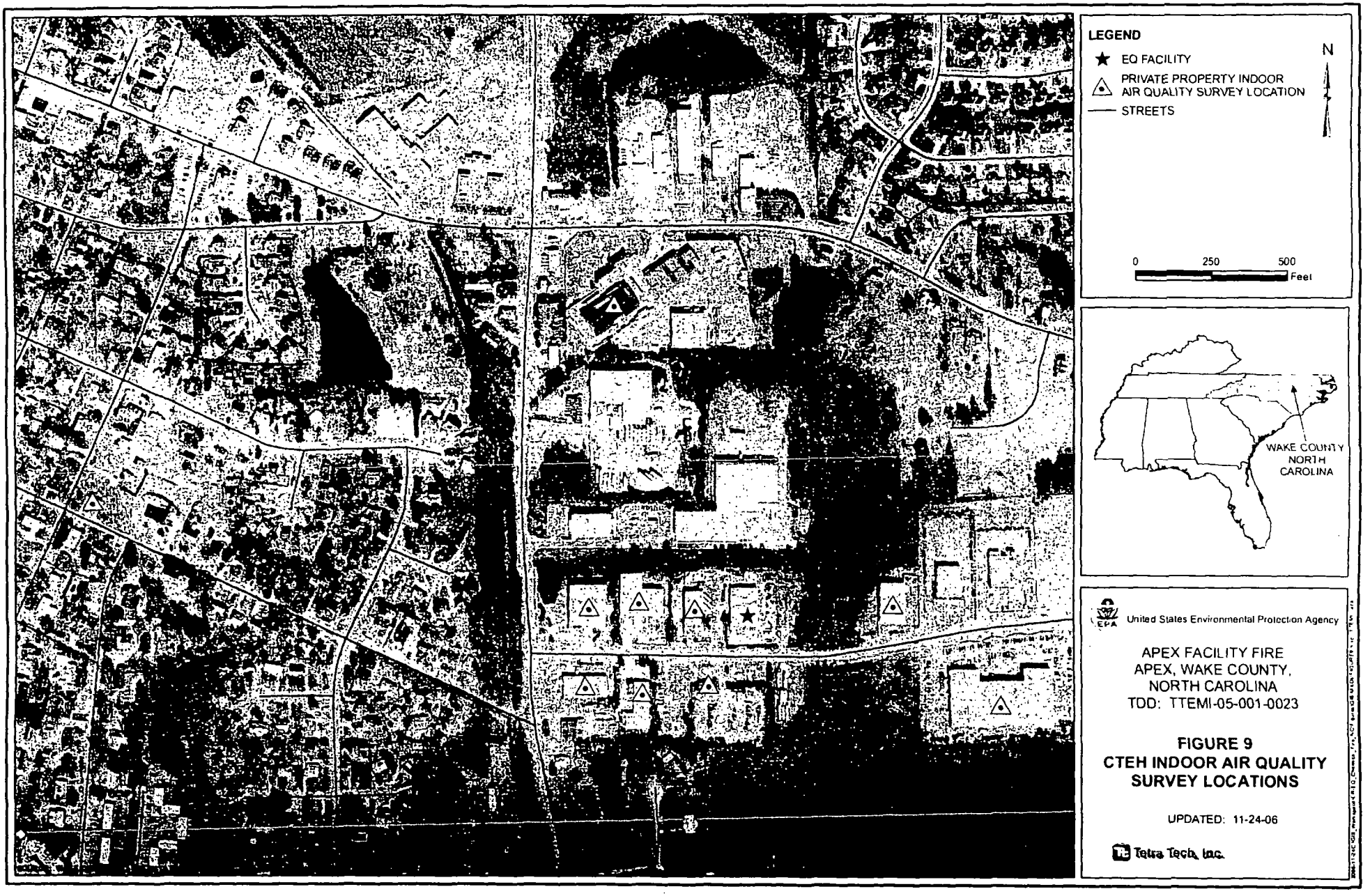
United States Environmental Protection Agency

APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023

FIGURE 8
CTEH FINAL AIR MONITORING LOCATIONS

UPDATED: 11-24-06

Tetra Tech, Inc.


LEGEND
EQ FACILITY
PRIVATE PROPERTY INDOOR AIR QUALITY SURVEY LOCATION
STREETS
N
0
250
500
Feet
WAKE COUNTY
NORTH
CAROLINA
United States Environmental Protection Agency
APEX FACILITY FIRE
APEX, WAKE COUNTY,
NORTH CAROLINA
TDD: TTEMI-05-001-0023
FIGURE 9
CTEH INDOOR AIR QUALITY
SURVEY LOCATIONS
UPDATED: 11-24-06
Tetra Tech, Inc.

APPENDIX E
INDOOR AIR QUALITY SURVEYS
(9 Sheets)

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: 10/7/06 15:00 EDT

Name: Action Machinery Sales
Address: 1001 Investment Blvd
General direction to home/business: 2 buildings to the west of EQ
Telephone Number: (919) 387 -- 0092 Nature of Concern: Concern of air quality in building following EQ fire.

Scheduling/Contact Information: Mike Sawaia [redacted]

Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10/8/06	12:21	Front office	MultiRae	VOC	0.0	ppm	No unusual odors	PN
" "	12:22	Kitchen / Breakroom	" "	VOC	0.0	ppm	No unusual odors	PN
10/8/06	12:23	South end of warehouse	" "	VOC	0.0	ppm	Normal machinery odors	PN
10/8/06	12:25	NE corner of warehouse	" "	VOC	0.0	ppm	" "	PN
10/8/06	12:26	NW corner of warehouse	" "	VOC	0.0	ppm	" "	PN

GPS Coordinates: _____ Comments: Air quality good, all clear.

_____ Reviewed _____ Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 095-518986 Calib. Date: 10 / 8 / 2006 Instrument _____ SN _____ Calib. Date: ___/___/ 20___

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biossystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: 10/7/06 15:00 EDT

Name: J.J. Nelson

Address: 1003 Investment Blvd

General direction to home/business: 1 building west of EQ office

Telephone Number: (919) 387 -- 0092 Nature of Concern: Concern for air quality in building following EQ fire.

Scheduling/Contact Information: Mike Seward Owner Adam Schneider - [redacted] Son of owner Lee Howard, President [redacted] Scott Stokes, VP -

Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10/8/06	12:40	Front Entryway	MultiRae	VOC	0.0	ppm	No unusual odors	PN
10/8/06	12:41	Breakroom / Copier area	" "	VOC	0.0	ppm	No unusual odors	PN
10/8/06	12:42	Front office	" "	VOC	0.0	ppm	" "	PN
10/8/06	12:43	Back office by fish tank	" "	VOC	0.0	ppm	" "	PN
10/8/06	12:44	Warehouse by office entry	" "	VOC	0.0	ppm	" "	PN
10/8/06	12:46	SW of warehouse by bay doors	" "	VOC	0.0	ppm	" "	PN
10/8/06	12:47	Conference Room	" "	VOC	0.0	ppm	" "	PN

GPS Coordinates: _____ Comments: Air Quality Good. All Clear. Paul Nay

Reviewed _____ Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 095-518886 Calib. Date: 10/8/2006 Instrument _____ SN _____ Calib. Date: ___/___/20___

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biosystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc. SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 7414 Client EQ Site Apex, NC Initial Call Date/Time: 10:00 EDT

Name: Capitol Coffee Systems (John Scott)
Address: 1000 Investment Blvd
General direction to home/business: Across street from EQ
Telephone Number: (919) 387-0002 Nature of Concern: Air Quality Concern in building following fire at EQ.

Scheduling/Contact Information: John Scott [redacted]
Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10-7-06	16:03	Front office Area	Multi-Rae	VOC	0.0	ppm	No odors	PN
10-7-06	16:06	Break Room	" "	VOC	0.0	ppm	No odors	PN
10-7-06	16:10	Warehouse - West End	" "	VOC	0.0	ppm	No odors	PN
10-7-06	16:12	Vending Area	" "	VOC	0.0	ppm	No odors	PN
10-7-06	16:14	Warehouse - East End	" "	VOC	0.0	ppm	No odors	PN

GPS Coordinates: _____ Comments: Paul Nony

Reviewed _____ Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 095-572311 Calib. Date: 10/07/2006 Instrument _____ SN _____ Calib. Date: ___/___/20___

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biosystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc. SapphiRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF – Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP – Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: 10/8/06 10:00 EDT

Name: Dream Sports Center

Address: 1016 Investment Blvd.

General direction to home/business: 1/8 mile east of EQ

Telephone Number: (919) 387 -- 2955 Nature of Concern: Air quality in facility following fire.

Scheduling/Contact Information: Bob Boucher [redacted]
Rick Ahmad [redacted] Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10-8-06	11:48	Lobby / Entrance Area	MR	VOC	0.0	ppm	No odors	PN
" "	11:51	Arcade	MR	VOC	0.0	ppm	No odors	PN
" "	11:52	By Sprinkler Riser Room Door	MR	VOC	0.0	ppm	No odors	PN
" "	11:53	By SE exit door	MR	VOC	0.0	ppm	No odors	PN
" "	11:55	Middle of soccer field	MR	VOC	0.0	ppm	No odors	PN
" "	11:57	By SW exit door	MR	VOC	0.0	ppm	No odors	PN
" "	11:58	Concession Area	MR	VOC	0.0	ppm	No odors	PN

GPS Coordinates: _____ Comments: Air quality good. All clear. Paul Mag

_____ Reviewed _____ Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 595-518886 Calib. Date: 10 / 8 / 2006 Instrument _____ SN _____ Calib. Date: ___/___/ 20___

AR - RAE Systems AreaRAE
DT - TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT - Gastec Corporation GV 100 with colorimetric tubes
TP - Biosystems ToxiPro
MR - RAE Systems MultiRAE Plus
PR - RAE Systems ppbRAE
SIR - ThermoEnvironmental Instruments, Inc SapphIRe
SP - TSI Incorporated SidePak
SPM - Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR - RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: 11:00 EDT 10/8/06

Name: Park-Site, Plunkett Webster (PPW)
Address: 810 Center
General direction to home/business: North of
Telephone Number: (800) 845 -- 6160 Nature of Concern: Air quality concerns in buildings and facilities following EQ fire.

Scheduling/Contact Information: Robert Ehlers - 203-216-6935 Cody Ehlers Group
140 Sherman St Fairfield, CT 06824
[redacted]

Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10/8/06	13:48	Front office	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:51	Building 3 - SW corner	MR	VOC	0.0	ppm	Odors of lumber	PN
10/8/06	13:53	Building 3 - NE corner	MR	VOC	0.0	ppm	" "	PN
10/8/06	13:56	Building 2 - Center	MR	VOC	0.0	ppm	" "	PN
10/8/06	13:58	Building 1 Breakroom	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:59	Building 1 Warehouse Center	MR	VOC	0.0	ppm	Odor of lumbers	PN

GPS Coordinates: _____ Comments: _____

_____ Reviewed _____ Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 095-518886 Calib. Date: 10 / 8 / 2006 Instrument _____ SN _____ Calib. Date: ___/___/ 20___

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biossystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site ~~[redacted]~~ Apex, NC Initial Call Date/Time: 10/8/06 12:15 EDT

Name: Apex Gymnastics

Address: 1013 Investment Blvd

General direction to home/business: 500 feet east of EQ

Telephone Number: (919) 303 -- 7976 Nature of Concern: Concern for air quality in building following EQ fire.

Scheduling/Contact Information: Jean Sciacca [redacted]

Exemption 6 Personal privacy

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10/8/06	1321	By front door	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:22	Blue tumbling mat	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:23	Foam pit	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:25	Foam pit	MR	VOC	0.0	ppm	NO unusual odors	PN
10/8/06	13:26	By refrigerator near exit	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:28	Parents' Room	MR	VOC	0.0	ppm	No unusual odors	PN
10/8/06	13:29	Front office	MR	VOC	0.0	ppm	No unusual odors	PN

GPS Coordinates: _____ Comments: Air quality good. All clear. Paul Nay

_____ Reviewed _____ Entered _____ Quality Control/Quality Assurance

Instrument MR SN 095-518886 Calib. Date: 10 / 8 / 2006 Instrument _____ SN _____ Calib. Date: __/__/20__

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biosystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc. SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: 15:20 EDT 10/8/06

Name: [redacted]

Address: [redacted] Exemption 6 Personal privacy

General direction to home/business:

Telephone Number: ([redacted] Nature of Concern: Concern for air quality in house
Concern for surfaces in bathroom

Scheduling/Contact Information:

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10/8/06	13:21	Bathroom	MR	VOC	0.0	ppm	No unusual odors.	PN

GPS Coordinates: Comments: Air Quality Good. PN

Reviewed PN Entered Quality Control/Quality Assurance

Instrument MR SN 095-512704 Calib. Date: 10 / 8 / 2006 Instrument SN Calib. Date: / / 20

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biosystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc. SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 **Client** EQ **Site** Apex, NC **Initial Call Date/Time:** _____

Name: East Jordan Iron Works Inc. Ricky Hales

Address: 1006 Investment Apex, NC 27502

General direction to home/business: South of EQ

Telephone Number: (919) 362 -- 7744 Nature of Concern: Interior air quality

Scheduling/Contact Information: Ricky Hales - Office Mgr. [redacted] Exemption 5

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10-8	1325	Office west of Entryway	MR+	VOC	0.0	ppm	no odor	AH/MG
10-8	1326	Breakroom	MR+	VOC	0.0	ppm	no odor	AH/MG
10-8	1329	Main office - west	MR+	VOC	0.0	ppm	no odor	AH/MG
10-8	1331	Main office - east	MR+	VOC	0.0	ppm	no odor	AH/MG

GPS Coordinates: 35.72503, -78.83797 Comments: Air quality good - All clear.

Reviewed Paul Nany Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 094-912704 Calib. Date: 10/9/2016 Instrument _____ SN _____ Calib. Date: ___/___/20___

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biosystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc SapphIRe
SP – TSI Incorporated SidePak
SPM – Zellweger Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments, Inc TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

Residential Inspection Form

Project # 4414 Client EQ Site Apex, NC Initial Call Date/Time: _____

Name: Forbes Cabinets Jim Bendel

Address: 1002 Investment Apex, NC 27502

General direction to home/business: South of EQ

Telephone Number: (919) 362 -- 4277 Nature of Concern: Interior air quality

Scheduling/Contact Information: _____

Date	Time	Location Description	Instrument	Analyte	[ ]	Units	Comments	Initials
10-8	0809	North Entry way	MR+	VOC	0.0	PPM	no odor	AH/MG
10-8	0841	Center office area	MR+	VOC	0.0	PPM	no odor	AH/MG
10-8	0843	Break Room	MR+	VOC	0.0	PPM	no odor	AH/MG
10-8	0844	Southeast office hall to shop	MR+	VOC	0.0	PPM	no odor	AH/MG
10-8	1316	Center of Manufacturing shop	MR+	VOC	0.0	PPM	no odor	AH/MG
10-8	1317	Center of New wing to Manufacturing	MR+	VOC	0.0	PPM	no odor	AH/MG

GPS Coordinates: 35.82507 , -78.83469 Comments: Air quality good. All Clear. Paul Nany

Reviewed Paul Nany Entered _____ Quality Control/Quality Assurance _____

Instrument MR SN 095-512704 Calib. Date: 10 / 9 / 2006 Instrument _____ SN _____ Calib. Date: __ / __ / 20__

AR – RAE Systems AreaRAE
DT – TSI Incorporated DustTrak™ Aerosol Monitor Model 8520
GT – Gastec Corporation GV-100 with colorimetric tubes
TP – Biossystems ToxiPro
MR – RAE Systems MultiRAE Plus
PR – RAE Systems ppbRAE
SIR – ThermoEnvironmental Instruments, Inc SapphIRe
SP – TSI Incorporates SidePak
SPM – Zellwegar Analytics Single Point Monitor
TVAF - Thermo Environmental Instruments Inc. TVA-1000 Vapor Analyzer Flame Ionization Detector
TVAP - Thermo Environmental Instruments, Inc. TVA-1000 Vapor Analyzer Photoionization Detector
TR – RAE Systems ToxiRAE

APPENDIX F
AIR MONITORING DATA TABLES
(11 Pages and 1 cd)

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 1
CTEH EVACUATION AIR MONITORING AVERAGES AND MAXIMUMS

Location	Parameter	Average	Maximum	Units
AreaRAE 1	VOC	0.039	9.8	ppm
AreaRAE 2	VOC	0.000	0.0	ppm
AreaRAE 3	VOC	0.000	0.1	ppm
AreaRAE 4	VOC	0.000	0.0	ppm
AreaRAE 5	VOC	0.000	0.4	ppm
AreaRAE 6	VOC	0.000	0.0	ppm
AreaRAE 7	VOC	0.118	0.5	ppm
AreaRAE 8	VOC	0.000	0.6	ppm
AreaRAE 9	VOC	0.009	8.4	ppm
AreaRAE 10	VOC	0.007	0.6	ppm
AreaRAE 11	VOC	0.038	0.2	ppm
AreaRAE 12	VOC	0.007	0.1	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million
All data collected from beginning of response until 0700 October 7, 2006.

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 2
CTEH POST-EVACUATION AIR MONITORING AVERAGES AND MAXIMUMS

Location	Parameter	Average	Maximum	Units
AreaRAE 1	VOC	0.085	46.0	ppm
AreaRAE 2	VOC	0.003	3.1	ppm
AreaRAE 3	VOC	0.001	0.2	ppm
AreaRAE 4	VOC	0.001	5.8	ppm
AreaRAE 5	VOC	0.023	71.0	ppm
AreaRAE 6	VOC	0.000	1.9	ppm
AreaRAE 7	VOC	0.004	7.9	ppm
AreaRAE 8	VOC	0.024	25.3	ppm
AreaRAE 9	VOC	0.065	87.5	ppm
AreaRAE 10	VOC	0.057	49.5	ppm
AreaRAE 11	VOC	0.041	188.2	ppm
AreaRAE 12	VOC	0.006	93.0	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million
All data collected from 0700 October 7, 2006, until site demobilization on October 28, 2006.

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 1	10/06/06	VOC	0.039	9.8	ppm
AreaRAE 2	10/06/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/06/06	VOC	0.000	0.1	ppm
AreaRAE 4	10/06/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/06/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/06/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/06/06	VOC	0.045	0.2	ppm
AreaRAE 8	10/06/06	VOC	0.021	0.6	ppm
AreaRAE 9	10/06/06	VOC	0.000	0.2	ppm
AreaRAE 10	10/06/06	VOC	0.001	0.1	ppm
AreaRAE 11	10/06/06	VOC	0.018	0.1	ppm
AreaRAE 12	10/06/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/07/06	VOC	0.220	11.7	ppm
AreaRAE 2	10/07/06	VOC	0.000	1.0	ppm
AreaRAE 3	10/07/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/07/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/07/06	VOC	0.000	0.4	ppm
AreaRAE 6	10/07/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/07/06	VOC	0.042	0.5	ppm
AreaRAE 8	10/07/06	VOC	0.001	0.4	ppm
AreaRAE 9	10/07/06	VOC	0.029	8.4	ppm
AreaRAE 10	10/07/06	VOC	0.003	0.6	ppm
AreaRAE 11	10/07/06	VOC	0.013	0.5	ppm
AreaRAE 12	10/07/06	VOC	0.005	1.5	ppm
AreaRAE 2	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/08/06	VOC	0.001	0.4	ppm
AreaRAE 9	10/08/06	VOC	0.000	1.1	ppm
AreaRAE 10	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/08/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/08/06	VOC	0.001	0.4	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 2	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 9	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 10	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/09/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/10/06	VOC	0.000	0.6	ppm
AreaRAE 7	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 9	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 10	10/10/06	VOC	0.002	5.2	ppm
AreaRAE 11	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/10/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/11/06	VOC	0.016	3.1	ppm
AreaRAE 2	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/11/06	VOC	0.000	0.1	ppm
AreaRAE 9	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 10	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/11/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/12/06	VOC	0.003	1.5	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 2	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/12/06	VOC	0.000	1.9	ppm
AreaRAE 7	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/12/06	VOC	0.000	0.6	ppm
AreaRAE 9	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 10	10/12/06	VOC	0.000	0.1	ppm
AreaRAE 11	10/12/06	VOC	0.015	1.2	ppm
AreaRAE 12	10/12/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/13/06	VOC	0.004	2.5	ppm
AreaRAE 2	10/13/06	VOC	0.000	0.1	ppm
AreaRAE 3	10/13/06	VOC	0.008	0.2	ppm
AreaRAE 4	10/13/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/13/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/13/06	VOC	0.000	0.2	ppm
AreaRAE 7	10/13/06	VOC	0.000	0.1	ppm
AreaRAE 8	10/13/06	VOC	0.000	0.1	ppm
AreaRAE 9	10/13/06	VOC	0.002	1.2	ppm
AreaRAE 10	10/13/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/13/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/13/06	VOC	0.000	0.6	ppm
AreaRAE 1	10/14/06	VOC	0.079	6.8	ppm
AreaRAE 2	10/14/06	VOC	0.001	0.2	ppm
AreaRAE 3	10/14/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/14/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/14/06	VOC	0.000	0.1	ppm
AreaRAE 6	10/14/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/14/06	VOC	0.001	0.5	ppm
AreaRAE 8	10/14/06	VOC	0.213	25.3	ppm
AreaRAE 9	10/14/06	VOC	0.002	0.5	ppm
AreaRAE 10	10/14/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/14/06	VOC	0.038	5.7	ppm
AreaRAE 12	10/14/06	VOC	0.000	0.1	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 2	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/15/06	VOC	0.006	0.6	ppm
AreaRAE 6	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/15/06	VOC	0.000	0.1	ppm
AreaRAE 8	10/15/06	VOC	0.038	14.0	ppm
AreaRAE 9	10/15/06	VOC	0.018	1.0	ppm
AreaRAE 10	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/15/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/16/06	VOC	0.131	19.7	ppm
AreaRAE 2	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/16/06	VOC	0.094	8.1	ppm
AreaRAE 6	10/16/06	VOC	0.000	0.1	ppm
AreaRAE 7	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/16/06	VOC	0.001	0.5	ppm
AreaRAE 9	10/16/06	VOC	0.001	0.4	ppm
AreaRAE 10	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/16/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/17/06	VOC	0.034	11.6	ppm
AreaRAE 2	10/17/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/17/06	VOC	0.000	0.1	ppm
AreaRAE 4	10/17/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/17/06	VOC	0.739	71.0	ppm
AreaRAE 6	10/17/06	VOC	0.000	0.1	ppm
AreaRAE 7	10/17/06	VOC	0.007	7.9	ppm
AreaRAE 8	10/17/06	VOC	0.001	0.7	ppm
AreaRAE 9	10/17/06	VOC	0.067	8.0	ppm
AreaRAE 10	10/17/06	VOC	0.003	2.3	ppm
AreaRAE 11	10/17/06	VOC	0.893	188.2	ppm
AreaRAE 12	10/17/06	VOC	0.002	0.9	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 1	10/18/06	VOC	0.005	1.6	ppm
AreaRAE 2	10/18/06	VOC	0.046	0.5	ppm
AreaRAE 3	10/18/06	VOC	0.004	0.1	ppm
AreaRAE 4	10/18/06	VOC	0.004	5.8	ppm
AreaRAE 5	10/18/06	VOC	0.006	0.5	ppm
AreaRAE 6	10/18/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/18/06	VOC	0.054	3.3	ppm
AreaRAE 8	10/18/06	VOC	0.074	10.0	ppm
AreaRAE 9	10/18/06	VOC	0.384	24.2	ppm
AreaRAE 10	10/18/06	VOC	0.112	4.9	ppm
AreaRAE 11	10/18/06	VOC	0.029	1.1	ppm
AreaRAE 12	10/18/06	VOC	0.026	2.1	ppm
AreaRAE 1	10/19/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/19/06	VOC	0.002	0.2	ppm
AreaRAE 3	10/19/06	VOC	0.000	0.1	ppm
AreaRAE 4	10/19/06	VOC	0.002	2.7	ppm
AreaRAE 5	10/19/06	VOC	0.002	0.2	ppm
AreaRAE 6	10/19/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/19/06	VOC	0.022	4.3	ppm
AreaRAE 8	10/19/06	VOC	0.018	4.2	ppm
AreaRAE 9	10/19/06	VOC	0.360	87.5	ppm
AreaRAE 10	10/19/06	VOC	0.777	12.3	ppm
AreaRAE 11	10/19/06	VOC	0.046	2.4	ppm
AreaRAE 12	10/19/06	VOC	0.029	2.4	ppm
AreaRAE 1	10/20/06	VOC	0.011	11.5	ppm
AreaRAE 2	10/20/06	VOC	0.002	0.2	ppm
AreaRAE 3	10/20/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/20/06	VOC	0.009	0.6	ppm
AreaRAE 5	10/20/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/20/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/20/06	VOC	0.001	1.1	ppm
AreaRAE 8	10/20/06	VOC	0.000	0.2	ppm
AreaRAE 9	10/20/06	VOC	0.003	1.1	ppm
AreaRAE 10	10/20/06	VOC	0.084	8.7	ppm
AreaRAE 11	10/20/06	VOC	0.020	2.5	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 12	10/20/06	VOC	0.002	0.8	ppm
AreaRAE 1	10/21/06	VOC	0.750	46.0	ppm
AreaRAE 2	10/21/06	VOC	0.001	0.2	ppm
AreaRAE 3	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/21/06	VOC	0.008	0.5	ppm
AreaRAE 5	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/21/06	VOC	0.055	11.1	ppm
AreaRAE 9	10/21/06	VOC	0.342	24.1	ppm
AreaRAE 10	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/21/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/22/06	VOC	0.169	3.3	ppm
AreaRAE 2	10/22/06	VOC	0.000	0.1	ppm
AreaRAE 3	10/22/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/22/06	VOC	0.000	0.1	ppm
AreaRAE 5	10/22/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/22/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/22/06	VOC	0.000	0.7	ppm
AreaRAE 8	10/22/06	VOC	0.013	8.7	ppm
AreaRAE 9	10/22/06	VOC	0.162	13.3	ppm
AreaRAE 10	10/22/06	VOC	0.012	2.5	ppm
AreaRAE 11	10/22/06	VOC	0.009	1.7	ppm
AreaRAE 12	10/22/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/23/06	VOC	0.003	0.4	ppm
AreaRAE 3	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/23/06	VOC	0.000	0.1	ppm
AreaRAE 5	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/23/06	VOC	0.000	0.4	ppm
AreaRAE 8	10/23/06	VOC	0.084	6.3	ppm
AreaRAE 9	10/23/06	VOC	0.004	5.9	ppm
AreaRAE 10	10/23/06	VOC	0.000	1.3	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 11	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/23/06	VOC	0.000	0.0	ppm
AreaRAE 1	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/24/06	VOC	0.000	0.1	ppm
AreaRAE 3	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/24/06	VOC	0.008	2.6	ppm
AreaRAE 9	10/24/06	VOC	0.000	1.7	ppm
AreaRAE 10	10/24/06	VOC	0.226	49.5	ppm
AreaRAE 11	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/24/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/25/06	VOC	0.021	3.1	ppm
AreaRAE 3	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/25/06	VOC	0.000	0.2	ppm
AreaRAE 9	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 10	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 11	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/25/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/26/06	VOC	0.005	0.7	ppm
AreaRAE 3	10/26/06	VOC	0.000	0.2	ppm
AreaRAE 4	10/26/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/26/06	VOC	0.000	0.0	ppm
AreaRAE 6	10/26/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/26/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/26/06	VOC	0.001	0.2	ppm
AreaRAE 9	10/26/06	VOC	0.005	0.5	ppm
AreaRAE 10	10/26/06	VOC	0.008	1.5	ppm
AreaRAE 11	10/26/06	VOC	0.000	0.0	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 3
CTEH DAILY AIR MONITORING AVERAGES AND MAXIMUMS BY MONITORING LOCATION

Location	Date	Parameter	Average	Maximum	Units
AreaRAE 12	10/26/06	VOC	0.056	93.0	ppm
AreaRAE 2	10/27/06	VOC	0.000	0.1	ppm
AreaRAE 3	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 4	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 5	10/27/06	VOC	0.002	0.2	ppm
AreaRAE 6	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 8	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 9	10/27/06	VOC	0.002	0.3	ppm
AreaRAE 10	10/27/06	VOC	0.001	0.4	ppm
AreaRAE 11	10/27/06	VOC	0.001	0.5	ppm
AreaRAE 12	10/27/06	VOC	0.000	0.0	ppm
AreaRAE 2	10/28/06	VOC	0.000	0.0	ppm
AreaRAE 3	10/28/06	VOC	0.000	0.1	ppm
AreaRAE 4	10/28/06	VOC	0.000	0.2	ppm
AreaRAE 5	10/28/06	VOC	0.000	0.1	ppm
AreaRAE 6	10/28/06	VOC	0.000	0.0	ppm
AreaRAE 7	10/28/06	VOC	0.000	0.5	ppm
AreaRAE 8	10/28/06	VOC	0.000	0.0	ppm
AreaRAE 9	10/28/06	VOC	0.015	1.1	ppm
AreaRAE 10	10/28/06	VOC	0.005	0.5	ppm
AreaRAE 11	10/28/06	VOC	0.000	0.0	ppm
AreaRAE 12	10/28/06	VOC	0.000	0.0	ppm

Notes:
VOC = Volatile organic compounds
ppm = parts per million

APEX FACILITY FIRE
APEX, WAKE COUNTY, NORTH CAROLINA
TABLE 4
PARTICULATE MONITORING DAILY AVERAGES AND MAXIMUMS

Date	Average	Maximum	Units
10/11/06	0.05	0.36	mg/m^3
10/12/06	0.03	0.20	mg/m^3
10/13/06	0.01	0.12	mg/m^3
10/14/06	0.01	0.06	mg/m^3
10/15/06	0.01	0.59	mg/m^3
10/16/06	0.02	0.25	mg/m^3
10/17/06	0.29	18.55	mg/m^3
10/18/06	0.06	0.20	mg/m^3
10/19/06	0.07	0.15	mg/m^3
10/20/06	0.03	0.31	mg/m^3
10/21/06	0.03	0.27	mg/m^3
10/22/06	0.07	0.15	mg/m^3
10/23/06	0.03	0.63	mg/m^3
10/24/06	0.03	0.19	mg/m^3
10/25/06	0.03	2.13	mg/m^3
10/26/06	0.02	0.29	mg/m^3
10/27/06	0.04	0.30	mg/m^3
10/28/06	0.01	0.05	mg/m^3

Note:
mg/m^3 = milligrams per cubic meter

APPENDIX G
NCDENR SAMPLING REPORTS
(51 Pages)

Michael F. Easley, Governor

William G. Ross Jr., Secretary

N.C. Department of Environment and Natural Resources

Release: IMMEDIATE
Date: Nov. 17, 2006

Contact: Diana Kees
Phone: (919) 715-4112

ENVIRONMENTAL TESTS FIND NO SIGNS OF OFFSITE CONTAMINATION FROM EQ FIRE
MEDIA AVAILABILITY SCHEDULED AT 1:30 pm TODAY

RALEIGH – State environmental and public health officials today announced that environmental testing near the EQ Apex facility has found no offsite contamination as a result of October's fire. The testing, which was conducted in late October, was designed to look for heavy metals and other signs of contamination from the fire at the hazardous waste facility.

Apex Mayor Keith Weatherly said he was pleased that the state conducted the testing and happy to reassure residents that the fire had not affected nearby property. "It is so very gratifying to now be assured by the testing just completed that the hazardous materials were not spread across the Apex community, but instead are confined to the fire scene, and are now being safely contained, removed and disposed of elsewhere," he said.

The tests were completed at sites upwind and downwind of the fire. If offsite contamination had occurred as a result of the fire, then areas downwind from the fire would be likely to show a pattern of contamination with chemicals that were found in ashes on the EQ site. There was no such pattern. The ashes on the fire site primarily contain barium, cadmium, chromium and lead. Those particular chemicals were not found in unusual concentrations offsite, and there was no difference between tests conducted upwind and downwind of the fire.

"What we were looking for was any indication that homes or businesses might have been contaminated with heavy metals or other chemicals from the fire that could present a health risk to Apex citizens," said Robin Smith, assistant secretary for the environment at the N.C. Department of Environment and Natural Resources. "We didn't find that. We found the kind of thing you would find at low levels in any urban area."

State Epidemiologist Dr. Jeff Engel agreed. "Results from this sampling survey revealed no significant or widespread contamination associated from the fire at the EQ facility," he said. "While the fire may have caused some short-term respiratory problems, particularly for first responders, luckily its contamination has been contained to the facility site."

Inspectors took samples on exterior structure walls. Analysis of the exterior wipe samples showed that concentrations of all the tested pollutants were well below levels at which adverse health effects would be observed in the general population. Test results indicated no discernible pattern of metals deposition that might have correlated to wind-borne contamination from the EQ fire. The wipe tests detected background levels of various compounds both upwind and downwind of the fire and on both sides of the tested structures.

Both soil and exterior wipe tests didn't show high levels of any of the chemicals that have been found in ashes at the EQ site. Soil sample analyses indicated the presence of a number of metals – including arsenic, mercury, manganese and silver – widely distributed across the entire area sampled, both upwind and downwind of the fire. All of these metals were detected in concentrations within the stated EPA "naturally occurring" range. Soil testing did find three arsenic "hotspots," associated with identifiable arsenic sources (treated wood decks and an auto maintenance facility). Studies finding that arsenic leaches out of treated wood and can contaminate nearby soil led EPA to ban this particular kind of wood treatment in 2003. The levels detected are consistent with the levels seen in areas that have been treated with agricultural pesticides.

-more-

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FAX (919) 715-5181
Diana.Kees@ncmail.net

Some Apex residents had been particularly concerned about mercury contamination, because an outside consultant reportedly found elevated levels of mercury at one location. DHHS sampled for mercury and no elevated levels were found. Interior sampling found one house with higher than normal lead levels. The house is an older house and it is likely that lead-based paint, which is common in older homes, is the source.

NOTE: ENVIRONMENTAL AND HEALTH OFFICIALS WILL HOLD A MEDIA AVAILABILITY REGARDING THIS REPORT AT 1:30 TODAY IN ROOM 264 OF THE ADAMS BUILDING ON THE DOROTHEA DIX CAMPUS. DIRECTIONS:

From downtown: Exit the downtown area on Dawson Street. Just after you pass the area around the convention center, more into the far right lane. Look for the Western Blvd/Martin Luther King Blvd. exit. Bear to the right and go on to Western Blvd. to the second light on Western. You will go under a railroad bridge and turn left at this light. This will be Hunt Drive. Hunt Dr ends at a stop sign, turn right on to Umstead Dr. Go to the second building on the left and park in front. This is the Adams Building.

East from Cary on I-40/440: Take the Lake Wheeler exit (the Farmer's Market exit). At the light, turn left toward the Farmers' Market. At the second light, turn left on to Centennial Parkway. Go to the third light on Centennial and turn right on to Blair Dr. Come up Blair Dr. through a stop sign. Go through stop sign and park in front of the building on your left. This is the Adams Building.

West from downeast/Wilson on I-40/440: Take the Lake Wheeler exit (the Farmer's Market exit). At the light, turn right toward the Farmers' Market. At the second light, turn left on to Centennial Parkway. Go to the third light on Centennial and turn right on to Blair Dr. Come up Blair Dr. through a stop sign. Go through stop sign and park in front of the building on your left. This is the Adams Building.

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Environmental Tests Show No Offsite Contamination From EQ Fire

BACKGROUND

The EQ hazardous waste facility in Apex caught fire on the night of Oct. 5, 2006. No environmental monitoring could be done during the early hours of the fire for safety reasons, but air quality monitoring that began around 7 a.m. on Oct. 6 showed no elevated levels of any pollutants. Extensive air and surface water monitoring after the fire and continuing to the present also detected no contamination in the vicinity of the EQ facility. To address concerns that the fire may have contaminated homes and businesses near the EQ facility, the Department of Environment and Natural Resources (DENR) and the Department of Health and Human Services (DHHS) jointly developed a plan to test buildings and soils for heavy metals and other potential contaminants.

Testing was conducted during the last weeks of October. The Division of Air Quality in DENR selected sampling locations that included sites both upwind and downwind of the fire. The prevailing winds during the fire started from the east, but moved to the north as the fire progressed. Areas south and west of EQ were downwind from the fire and therefore most likely to be affected by any contamination leaving the EQ site. Upwind sites were less likely to be affected by the fire, since the prevailing winds were blowing smoke from the EQ fire away from those sites.

Thirty-nine sites were tested for outdoor contaminants. Two types of outdoor samples were taken – soil samples and wipe samples from the exteriors of buildings (both front and back). DHHS tested 31 sites for indoor contaminants (several of the homeowners who agreed to outdoor testing did not consent to indoor testing). Indoor sampling consisted of wiping horizontal surfaces and testing those wipes for contaminants. Two areas inside each structure were tested – a common area (such as a living room or kitchen) and one additional room. DHHS also tested 25 of the buildings for mercury vapor.

FINDINGS

The study found no evidence of off-site contamination resulting from the EQ fire. For the most part, all three testing programs found only very low levels of certain metals and other screened compounds at locations widely dispersed around the EQ facility site. The results were not unusual for an urban area. Elevated levels of arsenic were detected in three soil samples,

but the study also noted potential arsenic sources on those three properties (treated wood decking and an automobile repair shop). Interior sampling in one older home detected high lead levels that may be associated with lead-based paint. The results from each of the three testing programs are summarized below.

Soil Samples

Soil sample analyses indicated the presence of a number of metals – including arsenic, mercury, manganese and silver – widely distributed across the entire area sampled, both upwind and downwind of the fire. All of the metals were detected in concentrations falling within "naturally occurring" ranges established by the U.S. Environmental Protection Agency (EPA). The overall distribution of metals does not suggest dispersal from a point source centered on the EQ facility.

Three arsenic "hotspots" identified in the soil sampling are located near identifiable arsenic sources (treated wood decks and an auto maintenance shop). EPA banned one type of pressure wood treatment in 2003 based on studies finding that arsenic leaches out of treated wood and can contaminate nearby soil. The wide distribution of arsenic at lower levels across the study area is consistent with levels seen in areas that have been treated with agricultural pesticides and, in any case, is comparable to levels of arsenic found across the state.

The highest concentration of mercury detected in soil was at a location where an automobile maintenance and storage business has operated. Mercury is contained in many automobile components, including the trunk, hood and vanity light switches; anti-lock braking systems; high intensity headlamps; and dashboard displays. Changes or damage to those components during automobile maintenance work can release mercury. The wider distribution of mercury at low levels across the sampling area may be related to industrial or power plant emissions; residuals from lighting or industrial components; or to past application of agricultural and residential fungicides. Silver, which was also detected at very low levels, can be deposited from industrial and manufacturing activities or metals reclamation operations.

Exterior Wipe Samples

Analysis of the exterior wipe samples found that concentrations of metals and other screened contaminants were well below levels that would cause

adverse health effects in the general population. The wide distribution of these elements at very low concentrations indicates deposition over time from a variety of activities (as discussed above with respect to the soil samples). Test results indicated no discernible pattern of deposition that might have correlated to wind-borne contamination from the EQ fire. Instead, the wipe tests detected very low levels of certain metals and other screened contaminants both upwind and downwind of the fire and on both sides of the tested structures.

Inside Wipe Samples

Inside wipe samples found only one house with elevated levels of a screened contaminant. The wipe samples from that house detected lead levels slightly above the health-based standard for lead. It is likely that lead-based paint, which is common in older homes, is the source. DHHS and the Town of Apex are doing a follow-up investigation of that home to confirm the source of the lead.

Mercury Vapor Test

Some Apex residents had been particularly concerned about mercury contamination, because of reports that elevated levels of mercury had been found at one business near the EQ facility. DHHS sampled 25 buildings using a mercury monitor. No elevated levels of mercury were found in the study.

DISCUSSION

We would generally expect contamination originating from a particular source, such as the EQ fire, to form a consistent pattern. Contamination would be more likely and at higher concentrations downwind from the fire. This study found low levels of various elements at sites scattered upwind and downwind of the fire. Screened metals and other chemical compounds were found in very low concentrations on both the side of each structure that faced the fire and the side facing away from the fire.

The study also found no correlation between the elements detected off-site and those found in the ash remaining on the EQ site after the fire. The primary elements found in ash on the EQ property after the fire – barium, cadmium, chromium and lead –were not found at elevated levels in soil samples off site.

The findings of this study, which were similar both upwind and downwind, indicate that the low levels of metals and other contaminants detected represent either background levels or deposition over time from other sources. All of these elements occur naturally and can be found in low concentrations almost anywhere in the State. The elevated concentrations of arsenic at two locations can be explained by the presence of pressure-treated wood. The third high arsenic result was found near an automobile maintenance operation that is another potential arsenic source. The one instance of high lead levels is most likely associated with lead-based paint. If the lead was deposited as result of the EQ fire, we would expect to find high lead levels in other locations downwind of the fire and that was not the case.

We know that both emergency response personnel and some Apex citizens reported respiratory problems and other symptoms caused by exposure to smoke during and immediately after the fire. However, the absence of off-site contamination indicates no long-term public health risk associated with fire.

North Carolina Department of Environment and Natural Resources
Division of Air Quality

Michael F. Easley, Governor

William G. Ross, Jr., Secretary
B. Keith Overcash, P.E., Director

Toxics Protection Branch
Air Toxics Analytical Support Team (ATAST)
ATAST Response # 06020

Exterior Wipe Sampling Screening Program
Apex, NC

Final Report Date: November 15, 2006

Reginald C. Jordan, Ph.D., CIH
Robin R. Barrows, MEM

Table of Contents

Acronyms

COPC	Contaminants of Potential Concern
DAQ	Division of Air Quality
DENR	Department of Environment and Natural Resources
DHHS	Department of Health and Human Services
DPH	Division of Public Health
DWM	Division of Waste Management
DWQ	Division of Water Quality
ERG	Eastern Research Group
EQ	Environmental Quality (facility)
GC/MS	gas chromatograph/mass spectrophotometer
IC	ion Chromatography
ICP/MS	Inductively-Coupled Plasma/Mass Spectrometry
PAHs	Polycyclic Aromatic Hydrocarbons
TPB	Toxic Protection Branch
sq. cm.	square centimeter
sq. m.	square meter
µg	microgram

Acknowledgements

This report could not have been completed without the following members of the Toxics Protection Branch staff who tirelessly performed the canvass for sampling locations, and then collected the wipe samples:

Robin Barrows
Chris Bender
John Holland
Todd Pasley

Thank you for your hard work in the timely completion of this sampling project.

In addition, the efforts of Jim Bowyer and Lori Cherry in editing this report are greatly appreciated.

Mention of a commercial product does not imply endorsement by the State of North Carolina.

Introduction

Representatives of state and local agencies met on October 16, 2006, to discuss response efforts and citizens' concerns about potential health effects from the fire and explosions that occurred at the EQ facility in Apex, NC on October 5-6, 2006. This meeting, which occurred after the fire was effectively extinguished and the clean-up and remediation at that facility had begun, involved representatives from: the Town of Apex; Wake County; the Department of Environmental and Natural Resources (DENR) [Divisions of Waste Management (DWM); Water Quality (DWQ), and Air Quality (DAQ)]; and the Department of Health and Human Services (DHHS) and its Division of Public Health (DPH). While air monitoring during the fire indicated that concentrations of air pollutants were well below limits at which adverse health effects would be observed in the general population, nothing was known about pollutants that might have been deposited on the ground or exterior surfaces of buildings or infiltrated into homes, businesses, schools, and churches. To determine if pollutant deposition was a problem, DENR and DHHS jointly decided to design and implement a screening program using wipe samples collected inside and outside approximately 30 homes and buildings in the Apex, NC area. The Toxics Protection Branch (TPB) of the Division of Air Quality developed a sampling strategy for the screening program that included: (1) using local meteorological data obtained during the fire incident to determine sampling areas; (2) determining which chemical species to sample; (3) developing a list of sampling locations within those selected areas and sharing that list with DPH and DWM; and (4) conducting exterior wipe sampling at those selected locations. DPH conducted interior wipe sampling and mercury vapor sampling and DWM conducted soil sampling at those same selected locations. The goal of the screening program was to determine the levels of selected pollutants in the soil and settled dust on exterior and interior surfaces, and then to compare those levels with health-based screening values to assess the potential health impacts that could results from exposure of adults and children to those chemicals in the settled dust and soil.

Sampling Site Identification

On Thursday October 19, 2006 two TPB teams deployed to canvass sampling locations for the wipe sampling project.

Thirty sampling locations were initially considered for the screening project; 31 were finally selected. Highest priority was given for those locations located close in proximity to EQ and those generally downwind of EQ during the fire (the winds during the fire were generally from the east, changing over time to being from the north -- the "downwind" locations for sampling were those generally south to west of EQ. Because of meteorological conditions existing during the time of the fire, it could not be determined how deposition of particulate would be affected by distance from EQ, so locations were also selected at some distance from the fire. Locations were also selected both upwind and crosswind from the fire.

Each team conducted door-to-door canvassing in these selected areas on October 19, 2006. Because consent to perform the sampling was needed from the homeowners and business and school officials, each team targeted sites where people were present to be able to complete and sign the consent form. Sampling location selection was, therefore, not random, but for this screening process randomness was determined not to be a critical factor.

Sample collection from identified locations was begun and completed on Friday, October 20, 2006. On Friday evening, five additional locations were added to the original list at the request of the Town of Apex. The residents at these locations had expressed concerns about health effects, which manifested either during or immediately after the fire. These additional locations were sampled on Monday, October 23, 2006. All sampling locations are shown in Figure 1. The shaded areas in Figure 1 indicate the areas evacuated during the EQ fire. Site type identifications are listed in Table 1. For the purposes of this report, specific addresses are being withheld by request of several homeowners.

The Wipe Sampling Strategy

At each sampling location, wipe samples were collected on exterior surfaces located in the "front" and located in the "back." The "front" was defined to be that side of the structure facing the EQ facility; the "back" was that side opposite the front. The strategy employed was similar to methods used in response to a fire that occurred at another EQ facility located in Romulus, Michigan[1].

Contaminants of Potential Concern (COPCs) voiced by Apex citizens attending the Town Council meeting on October 16, 2006 included heavy metals, mercury, and cyanides. Other COPCs were added by TPB in planning for the wipe sampling program. The COPC list is shown in Table 2.

Table 1. Site Locations for Wipe Sampling

Site ID	Site
1	Business 1
2	Residence 1
3	Residence 2
4	Residence 3
5	Residence 4
6	Residence 5
7	Business 2
8	School 1
9	Residential Area 1
10	Residence 6
11	Residence 7
12	Residence 8
13	Residence 9
14	Residence 10
21	Residence 11
22	Residence 12
23	Residence 13
24	Business 3
25	Residence 14
26	Residence 15
27	Residence 16
28	School 2
29	Residence 17
30	Church 1
31	Residence 18
32	Residence 19
33	Residence 20
34	Residence 21
35	Residence 22
36	Residence 23
37	Residential Area 2
41	Residence 24
42	Residence 25
43	Residence 26
44	Residence 27
45	Residence 28

Appendix D contains the specific sites from which samples were obtained at each sampling location.

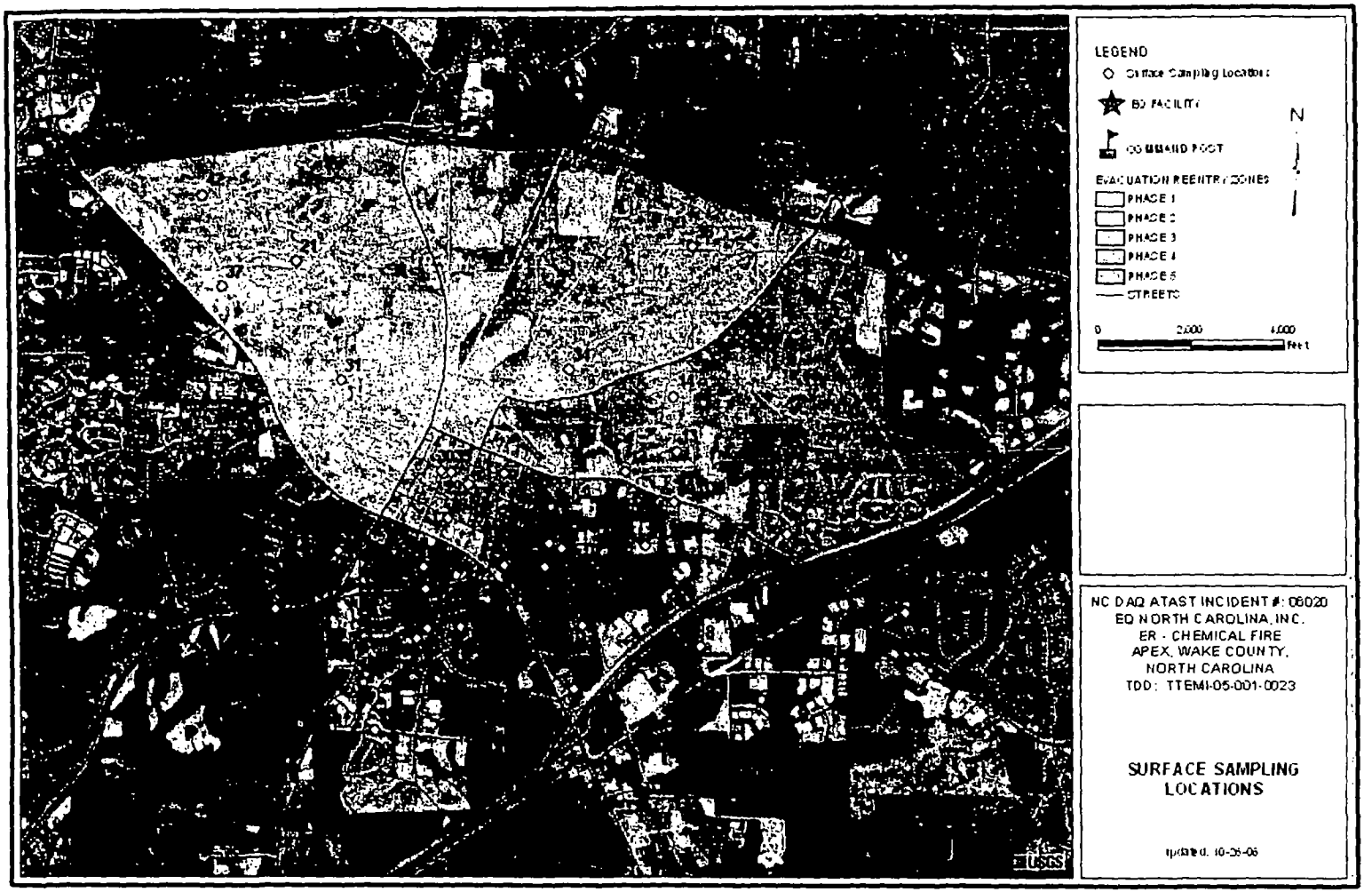
Table 2. COPC List

Metals	Anions	Polycyclic Aromatic Hydrocarbons (PAHs) PAH Scan
Arsenic	Cyanides	Acenaphthene
Barium		Acenaphthylene
Beryllium		Anthracene
Cadmium		Benzo (a) anthracene
Chromium		Benzo (a) pyrene
Cobalt		Benzo (b) fluoranthene
Copper.		Benzo (e) pyrene
Lead		Benzo (g,h,i) perylene
Manganese		Benzo (k) fluoranthene
Mercury		Chrysene
Nickel		Coronene
Selenium		Dibenz (a,h) anthracene
Silver		Fluoranthene
Vanadium		Fluorene
Zinc		Indeno (1,2,3-cd)pyrene
		Naphthalene
		Perylene
		Phenanthrene
		Pyrene

The metals tested were based primarily on those selected for wipe sampling following the EQ-Romulus fire[1]. Aluminum and iron were eliminated from the final list because of expected high background levels as well as exceedingly high screening levels. Calcium, magnesium, potassium, and sodium were eliminated because these are nutrients needed by humans for normal body function, and both background levels and screening levels for these elements were also expected to be elevated. The PAHs listed in Table 2 result from a "normal" PAH scan conducted by an analytical laboratory.

Wipe sampling for metals was conducted using Ghost wipes (cotton towelettes pre-moistened with de-ionized water); PAHs were sampled using glass fiber filters dampened with de-ionized water; and cyanides were sampled with cellulose filters dampened with de-ionized water. The sampling media were purchased from SKC, Inc. (Wipe Sampling Test Kit, Catalog No. 225-2401A).

Figure 1. Sampling Sites



At each sampling location (residence, business, school, church), TPB teams identified specific surfaces on which to take samples. The following priorities for which sampling were conducted at each site was determined prior to deployment to the field:

- Horizontal surfaces were given highest priority (e.g., railings, AC units)
- Non-porous surfaces were given highest priority (i.e. painted surfaces and metals)
- Surfaces must be exposed (i.e., not under a carport, overhang)
- If there were no horizontal surfaces, vertical surfaces would be sampled. Exposure and non-porous surface criteria still applied.

Two sets of three wipe samples were collected at each site – one set in the "front" location (side closest to the EQ facility) and one set in the "back" location (side farthest from the EQ facility). This strategy was also adopted in the wipe sampling conducted after the EQ-Romulus fire. Each set of wipe samples consisted of one wipe for metals, one for cyanides, and one for PAHs – a total of six samples per sampling location.
Each wipe sample consisted of wiping an area of approximately 100 square centimeters (sq. cm.) on each surface sampled. Templates of 100 sq. cm. area were used when possible; if not, the length and width of a sampling site was measured using a ruler and masking tape used to enclose that 100 sq. cm. area. The sampling medium was dampened with de-ionized water, if necessary, and then folded into quarters. The area was wiped, top to bottom, in a vertical pattern, the sampling medium was re-folded (so that a fresh quarter of the medium was exposed for sampling), and the area was re-wiped from left to right, in a horizontal pattern. The entire process was then repeated: re-folding of the sampling medium and horizontal and vertical wipes. The sampling medium was then placed in a sample container and labeled with the site number, location (front or back), and constituent (metal, PAH, cyanide). "APEX01FM" is the wipe sample collected in the "front" at location 01 for metals analysis.

To be able to characterize the metals, cyanide, and PAH background content on the sampling media used in the program, each team collected field blanks of both wet and dry sampling media. Three sets of field blanks were made by placing the sampling medium directly in the sample container after dampening with de-ionized water, if necessary (for wet blanks), or without dampening (for dry blanks). Field blanks were collected for each type of sample collected (metals, PAHs, and cyanides).

After sampling was completed, each team divided the containerized samples by COPC type and placed each sample type in a separate Zip-Loc® bag. Chain-of-custody forms and sample lists were created for each bag. The samples were then transported to the laboratory for analysis.

Health-based Benchmarks

The wipe sampling results are reported in units of µg/100 sq. cm. representing the mass of the analyte collected per 100 square centimeters of area sampled. The screening levels shown in Table 3 represent those levels above which there is increased probability of an adverse health impact resulting from exposure to the settled dust. The screening levels in Table 3 were adapted from those published by the Contaminants of Potential Concern (COPC) Committee of the World Trade Center Indoor Air Task Force Working Group[2]. The risk established for these screening levels was set by the COPC Committee Working Group at 1×10^{-4} (a 1 in ten thousand risk). This risk level represents a reasonable compromise in sample collection and analysis for a screening program. The risk is somewhat more relaxed than usual, but to achieve a risk level of 1×10^{-6} (one in a million), a substantially greater area would have to be sampled, resulting potentially in a reduction in collection efficiency of particulate on the sampling medium. Analytical interferences would also be substantially increased. Adopting these health-based benchmarks also are advantageous because they have been peer-reviewed and accepted[3].

Table 3. Screening Levels for Settled Dust

Analyte	Screening Level (µg/100 sq.cm.)
Arsenic	3.87
Barium	1100
Beryllium	31.4
Cadmium	15.6
Chromium	47
Cobalt	314
Copper	627
Lead	2.70
Manganese	314
Mercury	1.57
Nickel	314
Selenium	78.4
Silver	78.4
Vanadium	110
Zinc	4700
Cyanides (total)	26.9
PAHs (total)	1.45

Laboratory Analysis

All samples were analyzed at the Research Triangle Park Laboratories of ERG.

Metals

Particulate matter collected on wipe samples was extracted in 25 mL of 4% ultra-pure nitric acid for 3 hours on a heated, sonicated extractor. After cooling, the extract was diluted to 50mL with de-ionized water. Metals were analyzed by ICP/MS (Inductively-Coupled Plasma/Mass Spectrometry) using Compendium Method IO-3.5[4]

Cyanides

Wipe samples were prepared for analysis using NIOSH Method 6010[5]. The wipes were placed in sample vials and particulate matter was extracted using 10 mL 0.10N NaOH. The wipe samples were sonicated for 30 minutes, and analyzed for cyanides by ion chromatography using the analytical method described in EPA CTM-033.[6]

Polycyclic Aromatic Hydrocarbons (PAHs)

Immediately upon arrival, wipe samples were placed into vials and 40 mL of methylene chloride was added to each vial. A surrogate was added and the sample was sonicated for 30 minutes. The samples were dried by repeatedly pouring them through a filter containing sodium sulfate. The samples were concentrated to 1 mL by swirling in a heated RapidVap® solvent evaporator under a nitrogen atmosphere. The samples were then placed in a freezer until analysis. The samples were removed from the freezer, thawed, and then spiked with an internal standard and analyzed by Gas Chromatography/Mass Spectrometry (GC/MS) following EPA Compendium Method TO-13A[7].

Summary of Results

Metals

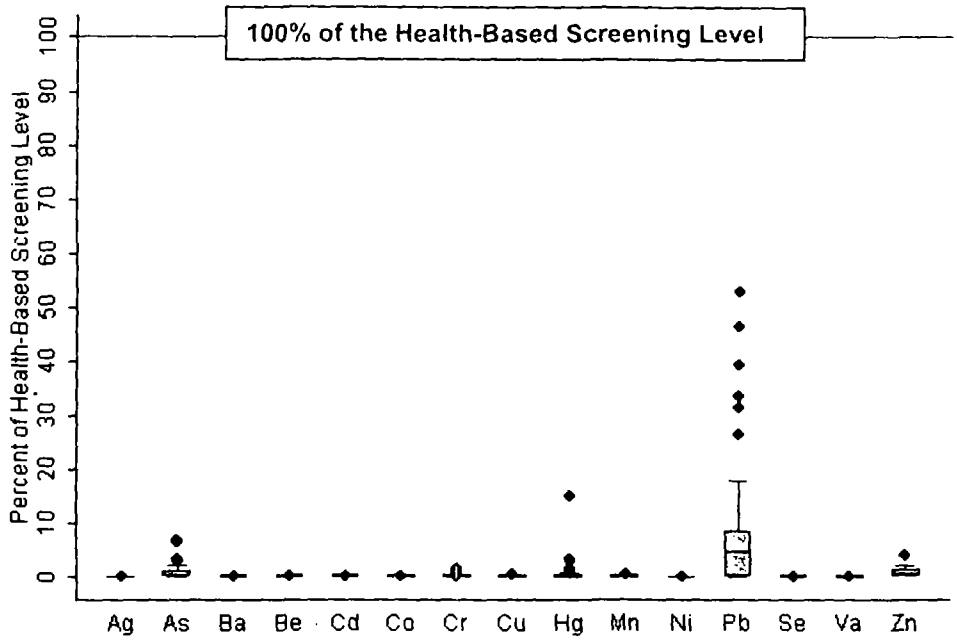
Two wipe samples were collected (one "front," one "back") at 36 sampling locations for a total of 72 samples. Table 4 shows the analytical results for metals. Column 1 lists the metal, Column 2 summarizes the number of wipe samples in which that metal was detected in the 72 samples collected; Column 3 summarizes the concentration range (minimum concentration, maximum concentration) detected, and Column 4 lists the health-based screening level for that metal. Arsenic, for example, was detected in 69 of 72 samples collected, and the concentration of arsenic in the wipe samples ranged from 0 µg/100sq.cm. to 0.258 µg/100sq.cm. compared to a screening level of 3.87 µg/100sq.cm. Appendix A contains the analytical results from each sampling location.

Table 4. Metal Concentrations in Exterior Settled Dust

Metal	No. Detections/ No. Samples	Concentration Range (µg/100sq.cm.)	Median Concentration (µg/100 sq.cm.)	Screening Level (µg/100 sq.cm.)
Arsenic	69/72	0 - 0.258	0.0194	3.87
Barium	68/72	0 - 2.50	0.00065	1100
Beryllium	68/72	0 - 0.001	0.0002	31.4
Cadmium	23/72	0 - 0.04	0	15.6
Chromium	36/72	0 - 0.74	0.001	47
Cobalt	72/72	0.0007 – 0.34	0.004	314
Copper	37/72	0 - 3.35	0.014	627
Lead	54/72	0 - 1.42	0.123	2.7
Manganese	64/72	0 - 1.08	0.164	314
Mercury	52/72	0 - 0.24	0.001	1.57
Nickel	13/72	0 - 0.09	0	314
Selenium	70/72	0 - 0.02	0.006	78.4
Silver	15/72	0 - 0.01	0	78.4
Vanadium	72/72	0.002 - 0.15	0.02	110
Zinc	47/72	0 – 191.3	33.6	4700

The metals results are also shown graphically in Figure 2. In this figure, the health-based screening level is set at 100% and each result is expressed as a percentage of the screening level (e.g., if the screening level is 10 µg/100 sq.cm. and an individual result is 1 µg/100 sq.cm., the percentage for that result would be 1/10 x 100% = 10%). As the graphic clearly shows, no metal concentration exceeded its health-based screening level. The largest percentage was for one wipe sample of lead, and that value was 53% of the screening level.

Figure 2. Metal Concentration as a Percentage of the Health-Based Screening Level



Ag: Silver
As: Arsenic
Ba: Barium
Be: Beryllium
Cd: Cadmium
Co: Cobalt
Cu: Copper
Hg: Mercury
Mn: Manganese
Ni: Nickel
Pb: Lead
Se: Selenium
Va: Vanadium
Zn: Zinc

Cyanides

Cyanides were not detected in any of the 72 wipe samples collected in the screening project. The detection limit for this analytical method was 0.40ug/100sq.cm. Appendix B contains the analytical results from each sampling location.

Table 5. Cyanide Concentration in Exterior Settled Dust

Analyte	No. detections/ No. samples	Concentration Range (ug/100 sq.cm.)	Screening Level (ug/100 sq.cm.)
Cyanide	0/72	No CN^- Detected in any sample	26.9

Polycyclic Aromatic Hydrocarbons (PAHs)

A PAH scan was used to analyze PAH wipe samples. This scan reports the concentration of 18 PAHs. One PAH was detected in each of 8 wipe samples of the 72 wipe samples collected. The screening level for total PAHs collected on each wipe sample is 1.45µg/100 sq.cm. The maximum

concentration reported on any single wipe was 0.03µg/100 sq.cm. Appendix C contains the analytical results from each sampling location.

Table 6. Polycyclic Aromatic Hydrocarbon (PAH) Concentrations in Exterior Settled Dust

Analyte	No. detections/ No. samples	Concentration Range (µg/100sq.cm.)	Screening Level for total PAHs (µg/100sq.cm.)	PAH Detected
PAH (total)	1/72	0 – 0.01	1.45	Benzo(g,h,i)perylene
	4/72	0 – 0.01	1.45	Naphthalene
	1/72	0 – 0.01	1.45	Perylene
	1/72	0 – 0.03	1.45	Fluoranthene
	1/72	0 – 0.01	1.45	Benzo(a)anthracene

Analysis of Exterior Wipe Sampling Data

The data show that cyanides were not detected in any wipe sample. In addition, the data show that the total PAH concentration on any wipe sample is extremely low; there is virtually no variability in PAH concentration across wipe samples. Metals concentration showed the only variability in the data set. The variability of metals concentration in wipe samples is shown in Figure 3. Figure 4 shows that same variability excluding zinc (notice the change in the concentration axis).

Figure 3. Variability in Concentration of Metals in Exterior Wipe Samples

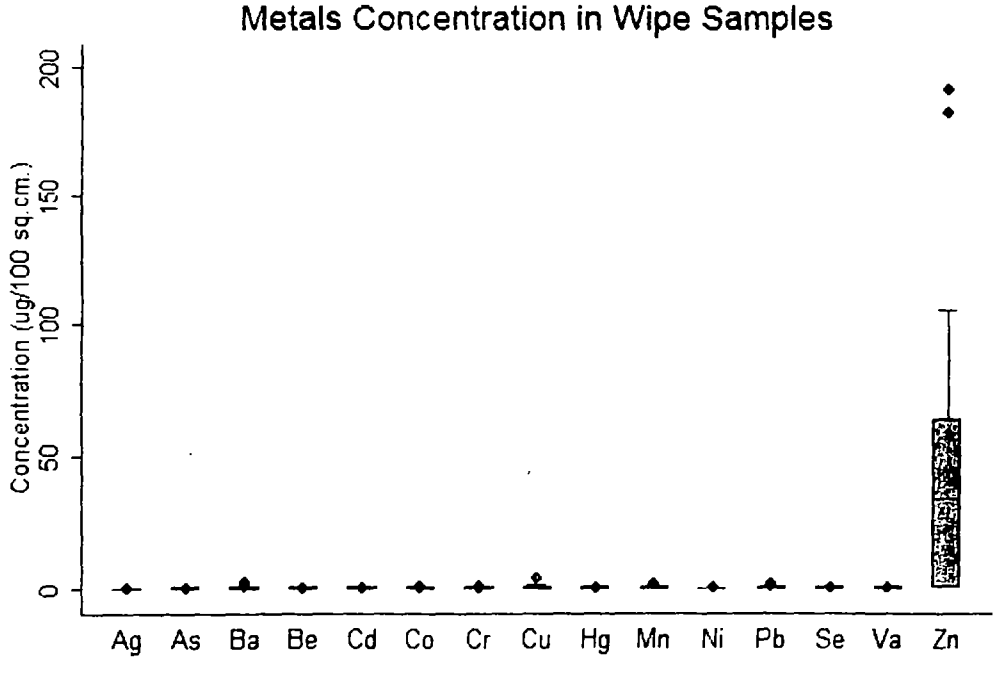
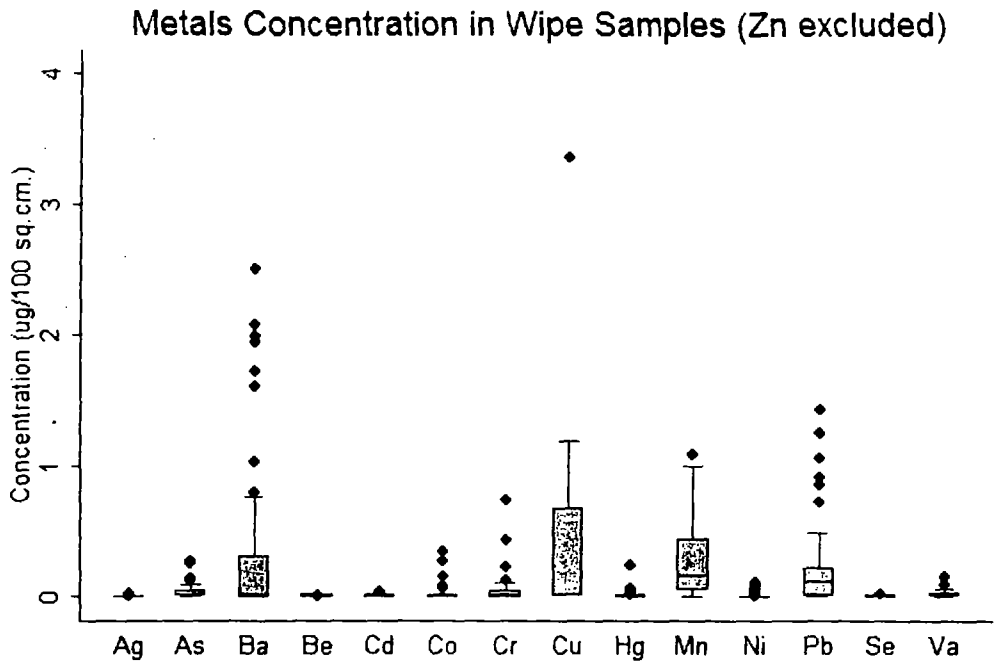


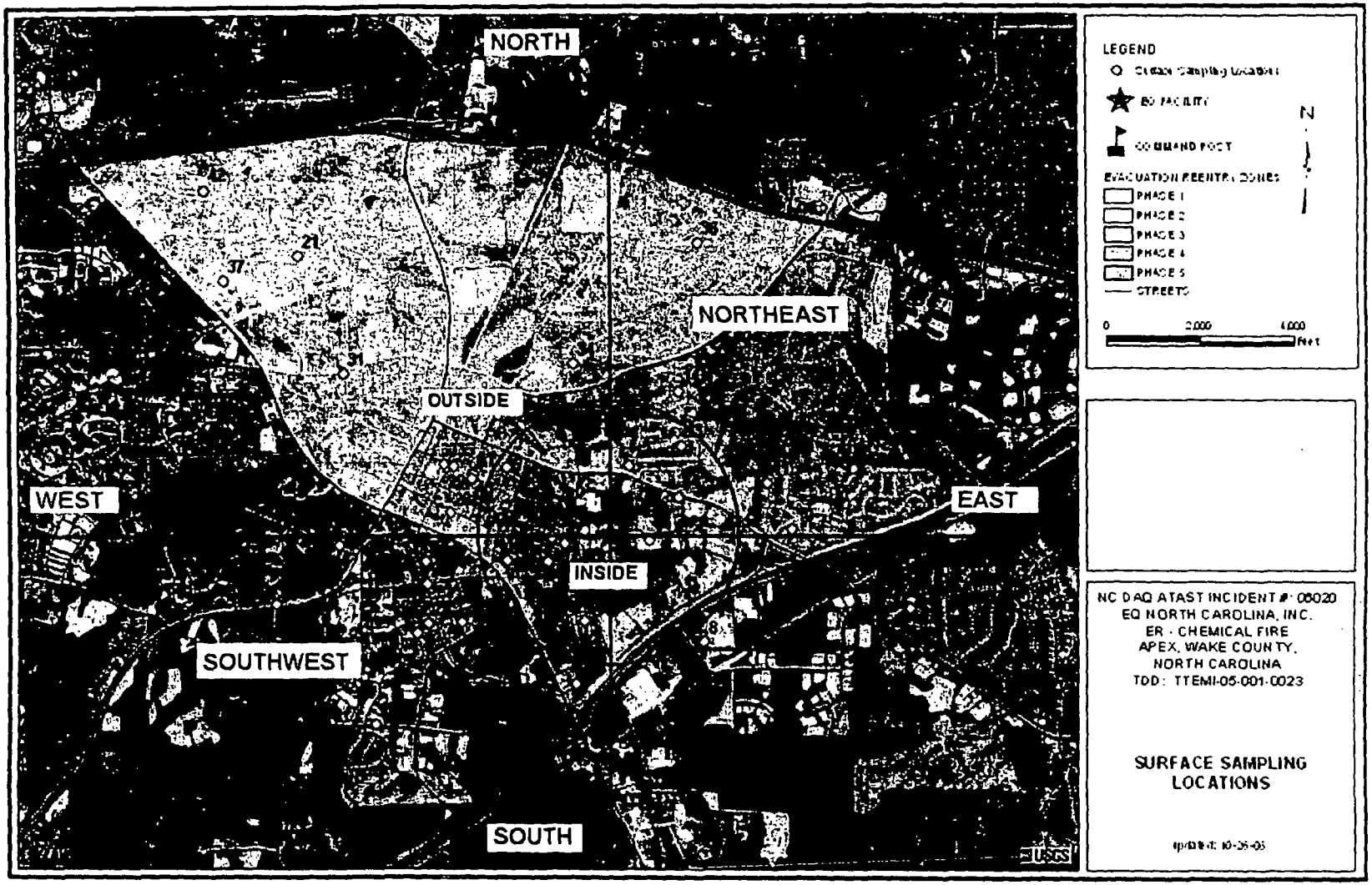
Figure 4. Metals Concentration in Wipe Samples (excluding Zinc)



While it has been shown that the maximum concentrations of each of these metals was much less than the health-based screening level established for each metal, the distribution of metals concentrations across sampling location warranted further examination. In the design stage of this screening program, it was thought that since the winds were primarily from the east on October 6, changing to being from the north on October 7, that particulate matter deposited on exterior surfaces at locations to the south and west (downwind) of the EQ facility might show higher concentrations of metals, cyanides, and/or PAHs than locations to the north and east (upwind). However, it was also possible that since the winds were light throughout most of the fire incident and since the fire burned hot, that particulate matter could possibly be deposited in other patterns – if particulate matter was deposited at all in the area around the EQ facility.

To examine the distribution of these metals across sampling location, the area around the EQ facility was divided in several ways. Referring to Figure 5, a horizontal line was drawn passing through the EQ facility. Sampling locations above this line were designated "NORTH"; below this line "SOUTH." Another line was drawn vertically through the EQ facility. Sampling locations to the right of this line were designated "EAST"; to the left of this line "WEST." A circle with a radius of ½ mile was drawn around the EQ facility. Sampling locations within this circle were "INSIDE"; all others were "OUTSIDE." Sampling locations in the sector from south of the EQ facility to west of the facility was designated "SOUTHWEST"; those locations in the sector from north of the EQ facility to east of the facility was designated "NORTHEAST." Comparing "NORTH" to "SOUTH," "EAST to "WEST," "INSIDE" to "OUTSIDE," and "SOUTHWEST" to NORTHEAST" yielded no discernible pattern of metal deposition. Metals concentration across re-entry phase was also examined and it was determined that there were no apparent differences in metals concentrations across re-entry phase.

Figure 5. Categorized Sampling Locations



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Appendix A

Metals Concentration by Sampling Location

			Metals Concentration (µg/100 sq.cm.)													
SAMPLE	NAME	LOCATION	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
		SCR. LEVEL	3.87	1100	31.4	15.6	314	627	2.70	314	1.57	314	78.4	78.4	110	4700
APEX 01BM	Business 1	Back	0.0053	0.2765	0.0003	0.0154	0.0016	0.0000	0.1813	0.0604	0.2368	0	0.0051	0.0070	0.0139	44.0
APEX 01FM		Front	0.0298	1.0315	0.0006	0.0143	0.0072	0.0042	0.3233	0.1584	0.0018	0	0.0082	0.0023	0.0883	76.4
APEX 02FM	Residence 1	Front	0.0120	0.2785	0.0002	0.0130	0.0111	0.5922	0.0813	0.0644	0.0019	0	0.0099	0	0.0175	0
APEX 02BM		Back	0.0042	0.1585	0.0003	0.0137	0.0644	0.0000	0.2163	0.0074	0.0011	0	0.0049	0	0.0139	41.6
APEX 03BM	Residence 2	Back	0.0022	0.2945	0.0003	0.0122	0.0152	0.1422	0.0853	0.0244	0	0	0.0052	0.0079	0.0089	86.4
APEX 03FM		Front	0.0273	0.3845	0.0001	0.0367	0.0008	0.0000	0.2103	0.0000	0	0	0.0013	0.0022	0.0041	0
APEX 04BM	Residence 3	Back	0.0611	0.5205	0.0006	0.0144	0.0048	0.1302	0.1503	0.6594	0.0010	0	0.0032	0	0.0127	26.4
APEX 04FM		Front	0.0203	0.3235	0.0002	0.0115	0.0024	0.0000	0.2093	0.0624	0.0006	0	0.0202	0	0.0110	0
APEX 05BM	Residence 4	Back	0.0068	0.5645	0.0003	0.0126	0.0033	0.0000	0.1693	0.0194	0.0105	0	0.0012	0	0.0058	0
APEX 05FM		Front	0.0080	0.5905	0.0007	0.0121	0.0148	0.0000	0.2373	0.4394	0.0099	0.0059	0.0092	0	0.0460	84.4
APEX 06BM	Residence 5	Back	0.0439	0.7705	0.0001	0	0.0019	0.5022	0.9103	0.0214	0	0	0.0031	0.0007	0.0530	0
APEX 06FM		Front	0.0199	0.0000	0.0004	0	0.0034	0.3322	0	0.0214	0.0001	0	0.0088	0	0.0141	76.4
APEX 07BM	Business 2	Back	0.0063	1.7215	0	0.0137	0.0056	0.0000	0.2923	0.0000	0	0	0.0055	0.0060	0.0175	0
APEX 07FM		Front	0.0109	0.6685	0.0005	0.0150	0.0030	0.0000	0.1993	0.0204	0	0	0.0086	0.0042	0.0366	64.4
APEX 08BM	School 1	Back	0.0036	0.2105	0.0002	0.0137	0.0031	0.0000	0.2303	0.2814	0	0	0.0041	0	0.0205	0
APEX 08FM		Front	0.0052	2.0715	0.0001	0.0161	0.0010	0.0000	0.1893	0.0000	0	0	0.0009	0	0.0024	0
APEX 09BM	Residential Area 1	Back	0.0400	2.5015	0.0006	0	0.0126	0.7122	0.3043	0.1874	0.0017	0.0979	0.0124	0	0.0450	68.4
APEX 09FM		Front	0.0225	0.2055	0.0003	0	0.0036	0.5422	0.2083	0.0664	0.0245	0.0019	0.0046	0.0021	0.0161	39.6
APEX 10BM	Residence 6	Back	0.0639	0.1745	0.0006	0	0.3445	0.4522	0	0.2054	0.0007	0.0029	0.0086	0	0.0402	91.4
APEX 10FM		Front	0.0377	0.4565	0.0001	0.0105	0.0212	0.0000	0.2163	0.0000	0	0	0	0	0.0155	0
APEX 11BM	Residence 7	Back	0.1264	0.0155	0.0002	0	0.0049	0.7422	0.3243	0.0394	0	0	0.0099	0.0008	0.0350	105.4
APEX 11FM		Front	0.0422	0.4145	0.0001	0.0135	0.0034	0.0000	0.1613	0.0074	0	0.0239	0.0031	0.0037	0.0116	0
APEX 12BM	Residence 8	Back	0	0.2355	0.0001	0.0092	0.0010	0.0000	0	0.0000	0	0	0.0015	0.0021	0.0025	0
APEX 12FM		Front	0.0365	0	0.0005	0	0.0028	0.9822	0.0533	0.0314	0	0	0.0063	0	0.0220	69.4
APEX 13BM	Residence 9	Back	0.0258	0	0.0001	0	0.0036	0.6322	0	0.0000	0.0004	0	0.0056	0.0001	0.0143	94.4
APEX 13FM		Front	0.2494	0.5165	0.0003	0.0137	0.0201	0.3422	1.0603	0.1544	0.0114	0	0.0068	0	0.0460	0
APEX 14BM	Residence 10	Back	0.0035	0.5885	0.0002	0.0150	0.0007	0.0000	0.0213	0.0000	0	0	0.0012	0	0.0043	0
APEX 14FM		Front	0.0146	0.1435	0	0.0141	0.0123	0.0000	0.1203	0.0000	0	0	0.0065	0	0.0270	46.0
APEX 21BM	Residence 11	Back	0.0105	0.3585	0.0001	0	0.0019	0.0000	0	0.1424	0	0	0.0018	0	0.0113	0
APEX 21FM		Front	0.2584	0.4715	0.0006	0	0.0151	0.0342	0.0653	0.9454	0.0010	0	0.0127	0	0.0250	79.4

Appendix A

Metals Concentration by Sampling Location

			Metals Concentration (µg/100 sq.cm.)													
SAMPLE	NAME	LOCATION	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
		SCR. LEVEL	3.87	1100	31.4	15.6	314	627	2.70	314	1.57	314	78.4	78.4	110	4700
APEX 22BM	Residence 12	Back	0.0416	0.3755	0.0002	0	0.0028	1.0622	0	0.1924	0.0044	0.0779	0.0073	0	0.0166	0
APEX 22FM		Front	0.0336	0.0465	0.0003	0.0079	0.0042	0.7922	0	0.8954	0.0062	0.0379	0.0110	0	0.0194	101.4
APEX 23BM	Residence 13	Back	0.0834	0.4265	0.0001	0	0.0105	1.0122	0.1113	0.0764	0.0000	0.0249	0.0046	0	0.0340	19.3
APEX 23FM		Front	0.0472	0.0485	0.0003	0	0.0077	0.5522	0.1853	0.1694	0.0013	0	0.0073	0	0.0372	63.4
APEX 24BM	Business 3	Back	0.0303	0.2435	0.0001	0	0.0025	0.7922	0	0.1404	0.0003	0.0229	0.0037	0	0.0188	0
APEX 24FM		Front	0.0245	0.0000	0.0001	0	0.0030	0.5822	0	0.4884	0.0007	0	0.0053	0	0.0194	38.1
APEX 25BM	Residence 14	Back	0.0438	0.3775	0.0001	0	0.0031	1.1922	0.3933	0.0954	0.0024	0	0.0044	0	0.0340	0
APEX 25FM		Front	0.0401	0.1545	0.0001	0	0.0045	0.9522	0	0.7294	0.0004	0	0.0086	0	0.0315	83.4
APEX 26BM	Residence 15	Back	0.0379	0.2775	0	0	0.0036	0.9022	0.0063	0.2944	0.0480	0	0.0067	0	0.0231	13.2
APEX 26FM		Front	0.0305	0.0945	0.0002	0	0.0040	0.7322	0.0373	0.5144	0.0017	0	0.0108	0	0.0329	71.4
APEX 27BM	Residence 16	Back	0.0824	0.1155	0.0004	0.0082	0.0038	0.8522	1.4203	0.3444	0	0	0.0225	0	0.0376	56.4
APEX 27FM		Front	0.0362	0.5685	0.0002	0	0.0043	0.8822	0.1433	0.7874	0.0094	0	0.0121	0	0.0411	48.7
APEX 28BM	School 2	Back	0.0001	0.2885	0.0001	0	0.0052	0.4822	0	0.2124	0.0006	0	0	0	0.0026	0
APEX 28FM		Front	0.0006	0.0575	0	0	0.0013	0.0000	0	0.7524	0.0008	0	0.0073	0	0.0034	39.4
APEX 29BM	Residence 17	Back	0.0150	0.3605	0.0001	0	0.0033	0.0000	0.3063	0.1824	0.0053	0	0.0023	0	0.0198	0
APEX 29FM		Front	0.0160	0.1435	0.0002	0	0.0012	0.0000	0.1023	0.4134	0.0054	0.0459	0.0040	0	0.0123	44.1
APEX 30BM	Church 1	Back	0	0.5855	0.0010	0	0.0024	0.0000	0.2403	0.2614	0.0010	0	0.0020	0	0.0489	2.2
APEX 30FM		Front	0.0159	0.4465	0.0003	0	0.2645	0.0000	0.0733	0.5704	0.0013	0	0.0129	0	0.0393	182.4
APEX 31BM	Residence 18	Back	0.0011	0.4365	0.0002	0	0.0060	0.0000	0.2253	0.1524	0.0114	0	0.0025	0	0.0188	0
APEX 31FM		Front	0.0004	0.0655	0.0001	0	0.0025	0.0000	0	0.6034	0.0031	0	0.0046	0	0.0022	46.8
APEX 32BM	Residence 19	Back	0.0494	0.1965	0.0004	0	0.0017	0.8222	0	0.1714	0.0066	0	0.0064	0.0060	0.0154	0
APEX 32FM		Front	0.1134	0.1895	0.0002	0	0.0061	0.0000	0.1113	0.7854	0.0233	0.0129	0.0099	0	0.0292	67.4
APEX 33BM	Residence 20	Back	0.0045	0.4455	0.0001	0	0.0042	0.0000	0	0.2774	0.0041	0	0.0013	0	0.0175	0
APEX 33FM		Front	0.0089	0.1755	0.0005	0	0.0201	0.3022	0.0923	1.0854	0.0085	0.0299	0.0044	0.0115	0.0347	49.3
APEX 34BM	Residence 21	Back	0.0129	0.3415	0	0	0.0077	0.0000	0	0.2074	0.0003	0	0.0054	0	0.0036	7.5
APEX 34FM		Front	0.0056	0.1995	0.0004	0	0.0034	0.0000	0.0413	1.0054	0.0221	0	0.0065	0	0.0142	76.4
APEX 35BM	Residence 22	Back	0.0126	0.7955	0.0005	0	0.0166	0.0232	0.1263	0.4354	0.0145	0	0.0046	0	0.0314	11.1
APEX 35FM		Front	0.0307	1.9415	0.0007	0	0.0183	0.0852	0.7133	0.4444	0.0119	0	0.0135	0	0.1468	28.3

Appendix A

Metals Concentration by Sampling Location

			Metals Concentration (µg/100 sq.cm.)													
SAMPLE	NAME	LOCATION	Arsenic	Barium	Beryllium	Cadmium	Cobalt	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Vanadium	Zinc
		SCR. LEVEL	3.87	1100	31.4	15.6	314	627	2.70	314	1.57	314	78.4	78.4	110	4700
APEX 36BM	Residence 23	Back	0.0152	0.5115	0.0004	0	0.0051	0.1252	0.0223	0.4724	0.0008	0	0.0056	0	0.0225	55.4
APEX 36FM		Front	0.0188	0.3245	0.0006	0	0.0072	0.0000	0.0323	0.7304	0.0052	0	0.0146	0	0 0417	191.4
APEX 37BM	Residential Area 2	Back	0	0.4445	0 0002	0	0.1525	0.0000	0.1303	0.1484	0.0003	0	0.0023	0	0.0127	0.7
APEX 37FM		Front	0.0094	0.0285	0	0	0.0015	0.0000	0	0.3884	0	0	0.0048	0	0 0024	19.1
APEX 41BM	Residence 24	Back	0.0031	0.2965	0.0002	0	0.0124	0.0000	0.0353	0.0374	0.0043	0	0.0030	0	0.0076	0
APEX 41FM		Front	0.0056	0.2085	0.0004	0	0.0091	0.0000	0.1403	0.1944	0.0234	0	0.0067	0	0.0453	47.0
APEX 42BM	Residence 25	Back	0.0129	0.2755	0.0002	0.0176	0.0020	0.0000	0.4863	0.0814	0.0187	0	0.0061	0	0 0208	37.7
APEX 42FM		Front	0.0055	0.3315	0.0001	0	0.0077	0.0000	0.1263	0.1064	0.0023	0	0.0017	0	0.0133	0
APEX 43BM	Residence 26	Back	0.0119	1.9815	0.0005	0	0.0718	0.1342	0.4253	0.6214	0.0531	0	0.0105	0	0.0466	63.4
APEX 43FM		Front	0.0705	1.6015	0.0013	0	0.0110	1.0622	0.8503	0.3034	0.0247	0 0159	0.0125	0	0.0542	44.3
APEX 44BM	Residence 27	Back	0.1194	0.0815	0.0004	0	0.0039	3.3522	1.2503	0.0794	0.0010	0	0.0077	0	0 0850	21.6
APEX 44FM		Front	0.1334	0.6495	0.0003	0	0.0030	0.9822	0.3733	0.0994	0.0017	0	0.0068	0	0.0386	55.4
APEX 45BM	Residence 28	Back	0.0531	0.0545	0.0001	0	0.0018	0.0000	0.0603	0.1074	0 0010	0	0.0126	0	0 0081	29.6
APEX 45FM		Front	0.0356	0.1715	0.0001	0	0.0061	0.9022	0	0.0744	0.0015	0	0 0071	0	0.0266	0

Appendix B

Cyanides Concentration by Sampling Location

SAMPLE	NAME	LOCATION	Cyanides
		SCR. LEVEL	29.6
APEX 28BM	School 2	Back	ND
APEX 28FM		Front	ND
APEX 29BM	Residence 17	Back	ND
APEX 29FM		Front	ND
APEX 30BM	Church 1	Back	ND
APEX 30FM		Front	ND
APEX 31BM	Residence 18	Back	ND
APEX 31FM		Front	ND
APEX 32BM	Residence 19	Back	ND
APEX 32FM		Front	ND
APEX 33BM	Residence 20	Back	ND
APEX 33FM		Front	ND
APEX 34BM	Residence 21	Back	ND
APEX 34FM		Front	ND
APEX 35BM	Residence 22	Back	ND
APEX 35FM		Front	ND
APEX 36BM	Residence 23	Back	ND
APEX 36FM		Front	ND
APEX 37BM	Residential Area 2	Back	ND
APEX 37FM		Front	ND
APEX 41BM	Residence 24	Back	ND
APEX 41FM		Front	ND
APEX 42BM	Residence 25	Back	ND
APEX 42FM		Front	ND
APEX 43BM	Residence 26	Back	ND
APEX 43FM		Front	ND
APEX 44BM	Residence 27	Back	ND
APEX 44FM		Front	ND
APEX 45BM	Residence 28	Back	ND
APEX 45FM		Front	ND

Appendix C

Polycyclic Aromatic Hydrocarbons Concentrations by Sampling Location

PAH Concentration (µg/100 sq.cm.)

SAMPLE	NAME	LOC.	Acenapth	Acenpthyl	B(a)A	B(a)P	B(b)F	B(e)P	B(g,h,i)P	B(k)F	Chrys	Corono	D(a,h)A	Fluor	I(cd)P	Naphth	Peryl	Phenan	Pyrene	Total
		SCR. LEVEL																		1.45
APEX 01BM	Business 1	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 01FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 02FM	Residence 1	Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 02BM		Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 03BM	Residence 2	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 03FM		Front	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01
APEX 04BM	Residence 3	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 04FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 05BM	Residence 4	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 05FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 06BM	Residence 5	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 06FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 07BM	Business 2	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 07FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 08BM	School 1	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 08FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 09BM	Residential Area 1	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 09FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 10BM	Residence 6	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 10FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 11BM	Residence 7	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.01
APEX 11FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.01
APEX 12BM	Residence 8	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.01
APEX 12FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 13BM	Residence 9	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 13FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 14BM	Residence 10	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 14FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 21BM	Residence 11	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 21FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix C

PAH Concentration by Sampling Location

PAH Concentration (µg/100 sq.cm.)

SAMPLE	NAME	LOC.	Acenapth	Acenpthyl	B(a)A	B(a)P	B(b)F	B(e)P	B(g,h,i)P	B(k)F	Chrys	Corono	D(a,h)A	Fluor	I(cd)P	Naphth	Peryl	Phenan	Pyrene	Total
		SCR. LEVEL																		1.45
APEX 22BM	Residence 12	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 22FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 23BM	Residence 13	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 23FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 24BM	Business 3	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 24FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 25BM	Residence 14	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 25FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 26BM	Residence 15	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 26FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 27BM	Residence 16	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 27FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 28BM	School 2	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 28FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 29BM	Residence 17	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 29FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 30BM	Church 1	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 30FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 31BM	Residence 18	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 31FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 32BM	Residence 19	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 32FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 33BM	Residence 20	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 33FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 34BM	Residence 21	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 34FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	0.01
APEX 35BM	Residence 22	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 35FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Appendix C

PAH Concentration by Sampling Location

PAH Concentration (µg/100 sq.cm.)

SAMPLE	NAME	LOC.	Acenapth	Acenpthyl	B(a)A	B(a)P	B(b)F	B(e)P	B(g,h,i)P	B(k)F	Chrys	Corono	D(a,h)A	Fluor	I(cd)P	Naphth	Peryl	Phenan	Pyrene	Total
		SCR. LEVEL																		1.46
APEX 36BM	Residence 23	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 36FM		Front	ND.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND	ND	ND	ND	ND	0.03
APEX 37BM	Residential Area 2	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 37FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 41BM	Residence 24	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 41FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 42BM	Residence 25	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 42FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01	ND	ND	ND	0.01
APEX 43BM	Residence 26	Back	ND	ND	0.01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.01
APEX 43FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 44BM	Residence 27	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 44FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 45BM	Residence 28	Back	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
APEX 45FM		Front	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Abbreviations:

Acenapth: Acenapthene
Acenpthyl: Acenapthylene
B(a)A: Benzo(a)anthracene
B(a)P: Benzo(a)pyrene
B(b)F: Benzo(b)fluoranthene
B(e)P: Benzo(e)pyrene
B(g,h,i)P: Benzo(g,h,i)perylene
B(k)F: Benzo(k)fluoranthene
Chrys: Chrysene
Corono: Coronene
D(a,h)A: Dibenz(a,h)anthracene
Fluor: Fluoranthene
I(cd)P: Indeno(1,2,3-cd)pyrene
Naphth: Naphthalene
Peryl: Perylene
Phenan: Phenanthrene

Appendix D

Sampling Location Descriptions

SAMPLE	NAME	LOCATION	DESCRIPTION
APEX 01B	Business 1	Back	Base of plastic light pole
APEX 01F		Front	Metal electrical box
APEX 02F	Residence 1	Front	Bottom of fiberglass canoe
APEX 02B		Back	Top of fiberglass boat
APEX 03B	Residence 2	Back	Top of ceramic tile stoop
APEX 03F		Front	Plastic cover on electrical utility box
APEX 04B	Residence 3	Back	Top of glass deck table
APEX 04F		Front	Window glass
APEX 05B	Residence 4	Back	Wood-like siding
APEX 05F		Front	Top of A/C unit
APEX 06B	Residence 5	Back	Window glass
APEX 06F		Front	Metal roof of carport
APEX 07B	Business 2	Back	Metal, railing
APEX 07F		Front	Metal, transformer housing
APEX 08B	School 1	Back	Cultured stone building material
APEX 08F		Front	Fiberglass wall
APEX 09B	Residential Area 1	Back	Metal, box
APEX 09F		Front	Plastic, box
APEX 10B	Residence 6	Back	Wood-like siding
APEX 10F		Front	Painted metal electrical box
APEX 11B	Residence 7	Back	Painted wood railing
APEX 11F		Front	Engineered vinyl-like siding
APEX 12B	Residence 8	Back	Top of A/C unit
APEX 12F		Front	Painted metal door
APEX 13B	Residence 9	Back	Painted wood rail
APEX 13F		Front	Painted metal deck table (rusted)
APEX 14B	Residence 10	Back	Glass, deck table top
APEX 14F		Front	Transformer cover
APEX 21B	Residence 11	Back	Crawl space access door
APEX 21F		Front	Glass, garage door window
APEX 22B	Residence 12	Back	Wood, framing garage
APEX 22F		Front	Metal door
APEX 23B	Residence 13	Back	Wood-like siding
APEX 23F		Front	Wood-like siding
APEX 24B	Business 3	Back	Window glass
APEX 24F		Front	Window glass
APEX 25B	Residence 14	Back	Top of A/C unit
APEX 25F		Front	Wood-like siding
APEX 26B	Residence 15	Back	Window glass
APEX 26F		Front	Top of A/C unit
APEX 27B	Residence 16	Back	Metal Electrical Power box
APEX 27F		Front	Top of A/C Unit
APEX 28B	School 2	Back	Metal Access Panel
APEX 28F		Front	Window glass in door

Appendix D

Sampling Location Descriptions

SAMPLE	NAME	LOCATION	DESCRIPTION
APEX 29B	Residence 17	Back	Vinyl-like siding
APEX 29F		Front	Vinyl-like siding
APEX 30B	Church 1	Back	Wood-like siding
APEX 30F		Front	Side of plastic side
APEX 31B	Residence 18	Back	Top of A/C unit
APEX 31F		Front	Window glass
APEX 32B	Residence 19	Back	Window glass
APEX 32F		Front	Top of A/C Unit
APEX 33B	Residence 20	Back	Wood-like siding
APEX 33F		Front	Wood-like siding
APEX 34B	Residence 21	Back	Window glass garage door
APEX 34F		Front	Wood-like siding
APEX 35B	Residence 22	Back	Top of A/C unit
APEX 35F		Front	Side of metal dump trailer
APEX 36B	Residence 23	Back	Wood-like siding
APEX 36F		Front	Wood-like siding
APEX 37B	Residential Area 2	Back	Metal door
APEX 37F		Front	Window glass
APEX 41B	Residence 24	Back	Painted metal mailbox
APEX 41F		Front	Bottom of plastic bucket
APEX 42B	Residence 25	Back	Painted wood rail
APEX 42F		Front	Glass, deck table top
APEX 43B	Residence 26	Back	Top of A/C unit
APEX 43F		Front	Vinyl-like siding
APEX 44B	Residence 27	Back	Painted wood rail
APEX 44F		Front	Top of A/C unit
APEX 45B	Residence 28	Back	Window glass
APEX 45F		Front	Glass, pane leaning against the structure

November 16, 2006

Apex Indoor Environmental Investigation

Occupational and Environmental Epidemiology Branch
Division of Public Health
North Carolina Department of Health and Human Services

Introduction

The State of North Carolina's Departments of Health and Human Services (DHHS) and Environment and Natural Resources (DENR) conducted environmental screening assessments of homes, schools, businesses, and a church in Apex, NC that are near the EQ facility. The NC Division of Air Quality chose the testing sites. The sites are located from 0.16 to 2.17 miles from the EQ facility. The purpose of the assessments was to: determine if these selected sites were affected by the October 5, 2006 fire at the EQ facility; determine if there was a need for additional sampling; and determine if there needed to be more guidance on cleaning nearby structures. The Occupational and Environmental Epidemiology Branch (OEEB) in DHHS conducted indoor environmental evaluations of 31 sites in Apex. The evaluations consisted of collecting wipe samples that were tested for selected metals, total cyanides, and polycyclic aromatic hydrocarbons (PAHs). In addition, indoor and outdoor air monitoring for mercury vapor was done at 26 sites because a private consultant had allegedly found high mercury levels inside a structure that was near the EQ fire and there was some community concern regarding mercury.

Methodology

At each site, surface wipe samples were collected on at least two horizontal surfaces (excluding floors), one in a common area such as a living room or kitchen and one in a bedroom. For the non-residential sites (i.e., schools), a common area such as a cafeteria was chosen in addition to a classroom. Attempts were made to collect wipe samples on surfaces that had not been cleaned since the fire occurred. Since all of the sites reported some type of cleaning since the fire, it was difficult to find surfaces that had not been cleaned. Wipe samples were not collected from surfaces where dust had accumulated for an extended period of time. Sample sites included interior windowsills, smooth surfaces of furniture, shelves, and countertops. Each wipe sample area was 100 square centimeters (0.01 square meters). The following filter materials were used for the wipe samples: for metals – Environmental Express Ghost Wipe™; for PAHs – Ahlstrom™ Grade 111 glass microfiber filters; and for cyanide – Ahlstrom™ Grade 54 quantitative filter papers.

The wipe samples were submitted to the Eastern Research Group (ERG) laboratory, an independent certified lab, in Morrisville, NC and were analyzed for polycyclic aromatic hydrocarbons (PAHs), total cyanides, and the following metals: arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, vanadium, and zinc. Polycyclic aromatic hydrocarbons are possible products of combustion and the metals were present in some of the materials that were stored at EQ and would not be destroyed by the fire. DAQ tested for these same chemicals in outdoor wipe sampling at the sites.

These chemicals (with the exception of cyanide) were on the list, "Settled Dust Screening Values and Supporting Toxicity Criteria," which was developed following the World Trade Center collapse (1).

Field blanks for cyanides, metals, and PAHs were collected for every ten wipe samples and were also submitted to ERG for analysis. Results for the blanks are listed in Table 1.

A Lumex mercury vapor analyzer was used for the indoor and outdoor mercury vapor sampling.

The sampling form (attached) used for the environmental investigation included three questions about combustion devices used at the sites that may be potential sources of indoor contaminants. More information can be found in the limitations section of this report. Information collected included questions regarding the presence or absence of unvented combustion devices (i.e., kerosene heater), primary furnace fuel source (gas or electric), and whether or not indoor tobacco smoking takes place at the site.

Data Analysis

For metals, the laboratory reported total micrograms detected per wipe sample for each of the metals on the list. For PAHs, the laboratory reported total micrograms of individual PAHs that were detected and these were added to get a value for total PAHs. For cyanide, the laboratory reported the micrograms of cyanide detected in each wipe sample. For each of the chemicals (metals, total PAHs, and cyanide), the mass of chemical detected was divided by the area of the wipe sample (in square meters) resulting in a value of micrograms of chemical per square meter (ug/m^2). For each site, the wipe sampling data for the common area and for the bedroom/other area were averaged to get one value for each site. If one of the values for a site was below the detection limit, the value for this sample was considered to be zero when calculating the average for the two samples. The average values detected in the wipe samples were compared to settled dust screening values that were developed for evaluating indoor dust contamination resulting from the World Trade Center (WTC) collapse (1). The authors of the WTC report developed the health-based screening values for indoor settled dust using EPA risk assessment methods and current toxicity criteria from EPA's Integrated Risk Information System (IRIS), EPA's Health Effects Assessment Summary Tables (HEAST), Agency for Toxic Substances and Disease Registry (ATSDR) minimum risk levels (MRLs), and other toxicity references as needed. These health-based screening values were peer reviewed and are generally accepted standards for such screening.

The mercury vapor sampling results were compared to the ATSDR residential cleanup level in air of 1 microgram per cubic meter (ug/m^3 or 1000 nanograms per cubic meter, ng/m^3) (2).

Summary of Sampling Results

Responses to questions about potential sources of indoor contaminants

Of the 31 sites selected for environmental sampling, 6.5% (n=2) reported the use of unvented combustion devices; 52% (n=16) of the sites reported using gas as the main source of energy for home heating purposes; and 16% (n=5) of the sites reported that indoor tobacco smoking had occurred.

Mercury Vapor Sampling

The mercury vapor sampling results are listed in Table 2, Mercury Vapor Sampling Results. Sampling for mercury vapor inside and outside at 26 sites detected mercury vapor concentrations from 1 to 335 ng/m^3. All of these concentrations are well below the Agency for Toxic Substances and Disease Registry (ATSDR) guidance level of 1000 ng/m^3 for mercury in indoor air at residences and businesses.

Surface Wipe Sampling for Cyanide

The wipe sampling results are listed in Table 1, Wipe Sampling Results. Surface wipe sampling did not detect cyanide in any of the samples.

Surface Wipe Sampling for Metals

The wipe sampling results are listed in Table 1, Wipe Sampling Results. Surface wipe sampling for metals detected lead above WTC health-based screening values for settled dust at one site (site 35). The sampling detected lead at 326 and 294 micrograms per square meter (ug/m^2) at the two locations for a site average of 310 ug/m^2. The WTC screening value for lead is 270 ug/m^2. Occupational and Environmental Epidemiology Branch (OEEB) staff learned that this site (a house) was built in 1961 thus lead-based paint may be the source of this lead dust. OEEB advised the residents of these results and advised them to identify potential indoor sources of lead dust and to control those potential sources.

For all of the other sites, the indoor dust wipe sampling did not detect metals above the WTC health-based screening values for settled dust.

Surface Wipe Sampling for Polycyclic Aromatic Hydrocarbons

The wipe sampling results are listed in Table 1, Wipe Sampling Results. Surface wipe sampling did not detect polycyclic aromatic hydrocarbons above the WTC health-based screening values for settled dust in any of the samples. Most of the sample results are below detection limits.

Limitations

This investigation has the following limitations:

- The wipe samples were collected more than 15 days after the fire started.
- At some sampling sites, it was difficult to find surfaces to collect dust wipe samples because most of the surfaces had been cleaned. Occupants at all of the sites reported that they had done some type of cleaning.
- At some of the sites, there were potential sources of indoor contaminants that could have contaminated indoor surfaces, including unvented combustion devices and indoor tobacco smoking.

Conclusions

Results from this sampling survey revealed that contaminants in settled dust at these sites are not present in concentrations that pose a health risk. In addition, the results do not indicate

significant or widespread contamination associated with the fire at the EQ facility. One site with elevated lead concentrations is under investigation and is most likely due to the older age of this site compared to others sites sampled. Given the limitations cited above and the results of this survey, NCDPH recommends no further sampling. Further, the results indicate that no additional cleaning measures are necessary.

References

1) World Trade Center Indoor Environmental Assessment: Response to Peer Review Comments on the Report for Selecting Contaminants of Potential Concern and Setting Health-Based Benchmarks, US EPA, NY City Dept of Health and Mental Hygiene, Agency for Toxic Substances and Disease Registry, NY State Dept of Health, and Occupational Safety and Health Administration. May 2003.

2) Suggested Action Levels for Indoor Mercury Vapors in Homes or Businesses with Indoor Gas Regulators, ATSDR. This document was produced on December 4, 2000.

Attachments

Table 1 - Wipe Sampling Results
Table 2 – Mercury Vapor Sampling Results
Sampling Form

Apex Fire

Indoor Environmental Evaluation

Sampling Form

Date: _____
Name: _____
Address: _____
Mailing Address: _____
Telephone numbers: _____

Information about the site:

Description (house, school, business, etc): _____
Unvented combustion devices: _____
Energy source for the furnace: _____
Indoor tobacco smoking: _____
Cleaning history since the fire on October 5, 2006: _____
_____

Wipe Samples:

Location	Type	Sample #

Mercury vapor monitoring results:
Time: _____ **inside:** _____
Time: _____ **outside:** _____

Person(s) collecting information: _____

Table 1 - Wipe Sampling Results
Summary of Indoor Surface Sampling Results (Sorted By Sample #) in micrograms per square meter
Apex, NC

Site	Distance‡ (Miles)	Sample		Arsenic 387*	Barium 109752*	Beryllium 3136*	Cadmium 1557*	Chromium 4704*	Cobalt 31358*	Copper 62716*	Lead 270*	Manganese 31358*	Mercury 157*	Selenium 7839*	Silver 7839*	Nickel 31358*	Zinc 470366*	Vanadium 10975*	Total PAH 145*	HCN (Ref)
			ug/m2																	
1	0.16																			
		001	CR																<0.077	
		002	CR																<0.077	
		003	CR																	< 40
		004	CR																	< 40
		005	CR	1.94	50 40	<0.55	5.38	16 50	0 58	124 00	45 60	16 00	0 46	<0.52	2.46	66 30	1680 00	1.23		
		N/A	BR																	
		SITE 1 AVERAGE		**1.94**	**50.40**	**<0.55**	**5.38**	**16.50**	**0.58**	**124.00**	**45.60**	**16.00**	**0.46**	**<0.52**	**2.46**	**66.30**	**1680.00**	**1.23**	**<0.077**	**< 40**
.2	0.21																			
		010	CR	1.72	34.8	<0.55	4.03	12.90	3.33	114.00	41.0	18.60	<0.41	<0.52	< 0 57	12 40	169.00	1.17		
		011	CR																<0.077	
		012	CR																	< 40
		013	BR	1 47	44.6	<0.55	2.20	12.0	0.36	68.20	39 60	14 10	<0.41	<0.52	<0 57	7.80	883 00	1 10		
		014	BR																<0 077	
		015	BR																	< 40
		SITE 2 AVERAGE		**1.60**	**39.70**	**<0.55**	**3.12**	**12.45**	**1.85**	**91.10**	**40.30**	**16.35**	**<0.41**	**<0.52**	**<0.57**	**10.10**	**526.00**	**1.14**	**<0.077**	**< 40**
5	0.52																			
		016	CR	7.85	95.1	<0.55	4.88	28 60	1 99	163 00	44 30	87.90	3.80	1.09	<0 57	33.90	3150.00	3.59		
		017	CR																<0 077	
		018	CR																	< 40
		019	BR	1.74	55.90	<0 55	13 40	13.70	0.43	67.50	27.90	15.20	<0 41	<0.52	<0.57	16.50	1430 00	1.05		
		020	BR																<0 077	
		021	BR																	< 40
		022	Blank	1.56	16.9	<0.55	<0.45	12 80	0 36	52 20	24.90	10.60	<0 41	<0.52	<0.57	3 59	1760.00	0 80		
		023	Blank																<0 077	
		024	Blank																	< 40
		SITE 5 AVERAGE		**4.80**	**75.50**	**<0.55**	**9.14**	**21.15**	**1.21**	**115.25**	**36.10**	**51.55**	**1.90**	**0.55**	**<0.57**	**25.20**	**2290.00**	**2.32**	**<0.077**	**< 40**
3	0.24																			
		025	CR	1.80	30 5	<0 55	4.91	12.50	0.27	52.60	25 20	12.10	<0 41	<0.52	<0 57	6.32	1850.00	0.84		
		026	CR																<0.077	
		027	CR																	< 40
		028	BR	2.76	78 90	<0.55	5.94	16.70	1.11	86.80	142.00	29.10	<0 41	<0.52	<0 57	17.10	1540.00	2 55		
		029	BR																<0 077	
		030	BR																	< 40
		SITE 3 AVERAGE		**2.18**	**54.70**	**<0.55**	**5.43**	**14.60**	**0.69**	**69.70**	**83.60**	**20.60**	**<0.41**	**<0.52**	**<0.57**	**11.71**	**1695.00**	**1.70**	**<0.077**	**< 40**
10	0.76																			
		031	CR	2.63	36.30	<0.55	1 87	15 80	16.0	82.30	41.90	48.70	<0 41	0.55	<0.57	9.73	3100.00	1.76		
		032	CR																<0 077	
		033	CR																	< 40
		034	BR	2 23	68 90	<0 55	7.38	15 60	0 61	8.82	48 20	19 20	<0.41	<0.52	<0 57	27.30	1140.00	1 34		
		035	BR																<0 077	
		036	BR																	< 40
		SITE 10 AVERAGE		**2.43**	**52.60**	**<0.55**	**4.63**	**15.70**	**8.31**	**45.56**	**45.05**	**33.95**	**<0.41**	**0.28**	**<0.57**	**18.52**	**2120.00**	**1.55**	**<0.077**	**< 40**

Site	Distance‡	Sample	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Selenium	Silver	Nickel	Zinc	Vanadium	Total PAH	HCN

	(Miles)		ug/m2	Arsenic 387*	Barium 109752*	Beryllium 3136*	Cadmium 1557*	Chromium 4704*	Cobalt 31358*	Copper 62716*	Lead 270*	Manganese 31358*	Mercury 157*	Selenium 7839*	Silver 7839*	Nickel 31358*	Zinc 470366*	Vanadium 10975*	Total PAH 145*	HCN (Ref)
8	0.8																			
		040	CR	1.84	63.40	<0.55	1.16	16.0	0.35	65.60	27.40	15.90	<0.41	<0.52	<0.57	8.70	2500.00	1.08		
		041	CR																<0.077	
		042	CR																	< 40
		043	BR	1.57	42.70	<0.55	2.37	14.0	0.79	78.40	26.50	13.70	<0.41	<0.52	0.85	16.80	4060.00	0.99		
		044	BR																<0.077	
		045	BR																	< 40
		SITE 8 AVERAGE		1.71	53.05	<0.55	1.77	15.00	0.57	72.00	26.95	14.80	<0.41	<0.52	0.43	12.75	3280.00	1.04	<0.077	< 40
21	1.72																			
		046	CR	6.46	59.20	<0.55	4.07	22.30	1.10	74.60	29.80	28.70	<0.41	<0.52	<0.57	19.40	3540.00	1.39		
		047	CR																<0.077	
		048	CR																	< 40
		049	BR	2.62	76.90	<0.55	1.41	16.30	6.24	67.20	58.90	49.80	<0.41	0.61	<0.57	7.47	1090.00	1.48		
		050	BR																<0.077	
		051	BR																	< 40
		052	Blank	1.52	16.60	<0.55	0.54	12.60	<0.25	49.80	23.50	10.20	<0.41	<0.52	<0.57	3.22	3940.00	0.81		
		053	Blank																<0.077	
		054	Blank																	< 40
		SITE 21 AVERAGE		4.54	68.05	<0.55	2.74	19.30	3.67	70.90	44.35	39.25	<0.41	<0.52	<0.57	13.44	2315.00	1.44	<0.077	< 40
27	0.76																			
		055	CR	1.73	47.70	<0.55	7.86	1.22	0.29	57.20	24.50	13.90	<0.41	<0.52	<0.57	11.70	2960.00	0.93		
		056	CR																<0.077	
		057	CR																	< 40
		058	BR	2.25	73.20	<0.55	2.93	14.90	0.78	70.60	65.60	16.90	<0.41	0.74	<0.57	8.39	1370.00	1.56		
		059	BR																<0.077	
		060	BR																	< 40
		SITE 27 AVERAGE		1.99	60.45	<0.55	5.40	8.06	0.54	63.90	45.05	15.40	<0.41	0.30	<0.57	10.05	2165.00	1.25	<0.077	< 40
24	1.23																			
		061	CR	2.13	3.80	<0.55	2.69	16.10	0.39	67.0	29.90	26.0	<0.41	<0.52	<0.57	6.81	951.00	2.91		
		062	CR																<0.077	
		063	CR																	< 40
		064	BR	2.05	91.80	<0.55	2.43	16.20	0.38	76.40	27.80	37.50	<0.41	<0.52	<0.57	13.50	788.00	1.73		
		065	BR																<0.077	
		066	BR																	< 40
		SITE 24 AVERAGE		2.09	47.80	<0.55	2.56	16.15	0.39	71.70	28.85	31.75	<0.41	<0.52	<0.57	10.16	869.50	2.32	<0.077	< 40
23	0.88																			
		070	CR	2.51	55.90	<0.55	2.20	18.60	0.52	86.0	32.60	18.70	<0.41	<0.52	0.79	12.50	912.00	1.23		
		071	CR																<0.077	
		072	CR																	< 40
		073	BR	2.98	135.00	<0.55	4.68	20.80	59.10	87.80	40.90	82.90	<0.41	0.59	0.97	13.30	919.00	1.56		
		074	BR																<0.077	
		075	BR																	< 40
		SITE 23 AVERAGE		2.75	95.45	<0.55	3.44	19.70	29.81	86.90	36.75	50.80	<0.41	0.30	0.88	12.90	915.50	1.40	<0.077	< 40
25	0.71																			
		076	CR	3.23	41.30	<0.55	1.20	18.50	0.47	74.0	28.50	22.10	<0.41	<0.52	<0.57	5.41	2110.00	1.38		
		077	CR																<0.077	
		078	CR																	< 40
		079	BR	3.32	70.90	<0.55	7.42	17.30	0.38	74.80	31.10	18.70	0.65	0.67	<0.57	8.52	964.00	1.29		

Site	Distance‡ (Miles)	Sample	ug/m2	Arsenic 387*	Barium 109752*	Beryllium 3136*	Cadmium 1557*	Chromium 4704*	Cobalt 31358*	Copper 62716*	Lead 270*	Manganese 31358*	Mercury 157*	Selenium 7839*	Silver 7839*	Nickel 31358*	Zinc 470366*	Vanadium 10975*	Total PAH 145*	HCN (Ref)

		080	BR														<0.077	
		081	BR															< 40
		082	Blank	1.73	27.70	<0.55	11.60	14.60	<0.25	54.80	26.20	11.10	0.54	0.58	<0.57	3.56	3960.00	0.97		
		083	Blank																<0.077	
		084	Blank																	< 40
		SITE 25 AVERAGE		3.28	58.10	<0.55	4.31	17.90	0.43	74.40	29.80	20.40	0.33	0.34	<0.57	6.97	1537.00	1.34	<0.077	< 40
29	0.57																			
		085	CR	2.69	46.60	<0.55	1.99	17.30	1.08	171.00	43.90	23.50	0.49	0.61	<0.57	7.53	2590.00	1.30		
		086	CR																<0.077	
		087	CR																	< 40
		088	BR	3.69	134.00	<0.55	4.47	18.80	1.73	132.00	240.00	33.40	3.91	0.76	0.81	13.00	1550.00	6.05		
		089	BR																<0.077	
		090	BR																	< 40
		SITE 29 AVERAGE		3.19	90.30	<0.55	3.23	18.05	1.41	151.50	141.95	28.45	2.20	0.69	0.41	10.27	2070.00	3.68	<0.077	< 40
30	0.73																			
		091	CR	3.28	71.80	<0.55	2.84	22.10	170.00	109.00	36.40	188.00	0.67	1.18	<0.57	42.50	3510.00	2.99		
		092	CR																<0.077	
		093	CR																	< 40
		094	BR	2.01	52.90	<0.55	2.03	16.10	0.79	109.00	30.60	16.50	<0.41	0.54	<0.57	35.90	939.00	1.12		
		095	BR																<0.077	
		096	BR																	< 40
		SITE 30 AVERAGE		2.65	62.35	<0.55	2.44	19.10	85.40	109.00	33.50	101.25	0.34	0.86	<0.57	39.20	2224.50	2.06	<0.077	< 40
12	0.31																			
		100	CR	4.98	68.70	<0.55	4.34	19.20	0.52	85.40	32.80	21.20	<0.41	<0.52	<0.57	15.00	1170.00	1.47		
		101	CR																<0.077	
		102	CR																	< 40
		103	BR	3.37	129.00	<0.55	1.16	19.10	0.42	81.30	32.10	36.70	<0.41	0.52	<0.57	9.58	913.00	1.34		
		104	BR																<0.077	
		105	BR																	< 40
		SITE 12 AVERAGE		4.18	98.85	<0.55	2.75	19.15	0.47	83.35	32.45	28.95	<0.41	0.26	<0.57	12.29	1041.50	1.41	<0.077	< 40
14	0.68																			
		106	CR	3.94	96.20	<0.55	1.15	20.60	0.56	77.00	31.00	21.30	<0.41	0.57	<0.57	8.14	1070.00	1.92		
		107	CR																<0.077	
		108	CR																	< 40
		109	BR	2.37	39.70	<0.55	2.01	16.10	2.71	73.00	27.80	21.10	<0.41	<0.52	<0.57	7.93	696.00	1.29		
		110	BR																<0.077	
		111	BR																	< 40
		112	Blank	1.75	54.30	<0.55	<0.45	14.10	<0.25	57.60	26.90	10.30	<0.41	<0.52	<0.57	3.35	690.00	0.83		
		113	Blank																<0.077	
		114	Blank																	< 40
		SITE 14 AVERAGE		3.16	67.95	<0.55	1.58	18.35	1.64	75.00	29.40	21.20	<0.41	0.28	<0.57	8.04	883.00	1.61	<0.077	< 40
13	0.47																			
		115	CR	1.86	43.80	<0.55	0.54	14.50	0.26	58.60	25.40	23.40	<0.41	0.60	<0.57	4.88	2500.00	1.13		
		116	CR																<0.077	
		117	CR																	< 40
		118	BR	2.30	130.00	<0.55	1.36	16.40	0.38	85.80	35.20	19.40	<0.41	0.59	<0.57	9.40	1540.00	1.63		
		119	BR																<0.077	
		120	BR																	< 40
		SITE 13 AVERAGE		2.08	86.90	<0.55	0.95	15.45	0.32	72.20	30.30	21.40	<0.41	0.60	<0.57	7.14	2020.00	1.38	<0.077	< 40

Site	Distance (Miles)	Sample	ug/m2	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Selenium	Silver	Nickel	Zinc	Vanadium	Total PAH	HCN
				387*	109752*	3136*	1557*	4704*	31358*	62716*	270*	31358*	157*	7839*	7839*	31358*	470366*	10975*	145*	(Ref)
28	0.65																			

	121	CR	2.25	181.00	<0.55	3.24	20.70	0.65	91.80	31.50	33.10	<0.41	0.69	<0.57	33.70	3010.00	2.11		
	122	CR																1.00	
	123	CR																	< 40
	124	BR	1.90	56.70	<0.55	6.15	17.30	0.29	61.40	26.80	66.10	0.57	1.07	<0.57	10.50	10300.00	1.43		
	125	BR																1.00	
	126	BR																	< 40
	SITE 28 AVERAGE		**2.08**	**118.85**	**<0.55**	**4.70**	**19.00**	**0.47**	**76.60**	**29.15**	**49.80**	**0.28**	**0.88**	**<0.57**	**22.10**	**6655.00**	**1.77**	**1.00**	**< 40**
33	**1.12**																		
	130	CR	2.04	43.60	<0.55	1.87	16.70	<0.25	63.30	28.00	57.00	<0.41	0.80	<0.57	6.80	9490.00	1.36		
	131	CR																1.00	
	132	CR																	< 40
	133	BR	2.17	145.00	<0.55	1.81	14.90	0.50	125.00	47.30	20.80	<0.41	0.54	<0.57	8.97	1890.00	1.10		
	134	BR																1.00	
	135	BR																	< 40
	SITE 33 AVERAGE		**2.11**	**94.30**	**<0.55**	**1.74**	**15.80**	**0.25**	**94.15**	**37.65**	**38.90**	**<0.41**	**0.67**	**<0.57**	**7.89**	**5690.00**	**1.23**	**1.00**	**< 40**
36	**1.25**																		
	136	CR	3.67	78.20	<0.55	1.89	22.90	1.14	120.00	38.90	101.00	<0.41	0.73	<0.57	13.70	5720.00	2.71		
	137	CR																1.00	
	138	CR																	< 40
	139	BR	1.99	182.00	<0.55	7.26	12.10	0.35	74.60	30.10	41.20	0.60	<0.52	1.43	8.44	1470.00	1.22		
	140	BR																1.00	
	141	BR																	< 40
	SITE 36 AVERAGE		**2.83**	**130.10**	**<0.55**	**4.58**	**17.50**	**0.75**	**97.30**	**34.50**	**71.10**	**<0.41**	**0.37**	**<0.57**	**11.07**	**3595.00**	**1.97**	**1.00**	**< 40**
32	**1.38**																		
	142	CR	2.08	102.00	<0.55	2.66	15.20	4.06	64.50	30.10	73.00	0.43	0.60	0.91	6.83	9370.00	1.38		
	143	CR																1.00	
	144	CR																	< 40
	145	BR	1.49	226.00	<0.55	3.55	11.20	<0.25	52.50	23.80	17.70	<0.41	<0.52	0.59	11.00	1770.00	0.88		
	146	BR																1.00	
	147	BR																	< 40
	SITE 32 AVERAGE		**1.79**	**164.00**	**<0.55**	**3.11**	**13.20**	**2.03**	**58.50**	**26.95**	**45.35**	**0.22**	**0.30**	**0.75**	**8.92**	**5570.00**	**1.13**	**1.00**	**< 40**
22	**0.84**																		
	148	CR	1.89	98.90	<0.55	2.74	15.60	0.29	64.40	27.00	51.20	<0.41	0.57	<0.57	8.05	8530.00	1.25		
	149	CR																<0.077	
	150	CR																	< 40
	151	BR	1.77	239.00	<0.55	6.97	13.00	<0.25	58.60	28.40	17.50	<0.41	<0.52	0.69	8.20	2440.00	0.95		
	152	BR																<0.077	
	153	BR																	< 40
	SITE 22 AVERAGE		**1.83**	**168.95**	**<0.55**	**4.86**	**14.30**	**0.15**	**61.50**	**27.70**	**34.35**	**<0.41**	**0.28**	**0.35**	**8.13**	**5485.00**	**1.10**	**<0.077**	**< 40**
7	**0.63**																		
	157	CR	2.22	103.00	<0.55	4.43	16.70	1.11	89.50	31.40	78.80	<0.41	<0.52	0.63	12.40	7090.00	1.56		
	158	CR																<0.077	
	159	CR																	< 40
	160	BR	1.91	100.00	<0.55	33.10	14.80	55.00	92.50	33.40	39.80	<0.41	<0.52	0.85	22.00	4110.00	1.38		
	161	BR																<0.077	
	162	BR																	< 40
	SITE 7 AVERAGE		**2.07**	**101.50**	**<0.55**	**18.77**	**15.75**	**28.06**	**91.00**	**32.40**	**59.30**	**<0.41**	**<0.52**	**0.74**	**17.20**	**5600.00**	**1.47**	**<0.077**	**< 40**

Site	Distance1 (Miles)	Sample	ugim2	Arsenic 387*	Barium 109752*	Beryllium 3136*	Cadmium 1557*	Chromium 4704*	Cobalt 31358*	Copper 62716*	Lead 270*	Manganese 31358*	Mercury 157*	Selenium 7839*	Silver 7839*	Nickel 31358*	Zinc 470366*	Vanadium 10975*	Total PAH 145*	HCN (Ref)
41	**0.83**																			
		163	CR	2.72	186.00	<0.55	17.50	16.30	0.54	72.70	34.80	138.00	<0.41	0.85	<0.57	9.96	11300.00	1.86		

		164	CR														<0.077	
		165	CR															< 40
		166	BR	2.35	152.00	<0.55	5.59	18.80	0.40	92.70	45.20	37.40	<0.41	0.56	<0.57	10.00	2130.00	1.63		
		167	BR																<0.077	
		168	BR																	< 40
		169	Blank	1.55	173.00	<0.55	1.74	12.10	<0.25	49.30	24.40	29.70	<0.41	<0.52	<0.57	4.57	2490.00	0.93		
		170	Blank																<0.077	
		171	Blank																	< 40
		SITE 41 AVERAGE		2.54	169.00	<0.55	11.55	17.55	0.47	82.70	40.00	87.70	<0.41	0.71	<0.57	9.98	6715.00	1.75	<0.077	< 40
43	0.63																			
		172	CR	4.47	105.00	<0.55	3.92	17.80	1.09	76.70	256.00	122.00	<0.41	0.99	<0.57	10.20	13200.00	2.93		
		173	CR																<0.077	
		174	CR																	< 40
		175	BR	5.17	243.00	<0.55	16.30	33.00	1.06	237.00	133.00	54.40	0.51	<0.52	<0.57	13.30	3850.00	2.25		
		176	BR																1.00	
		177	BR																	< 40
		SITE 43 AVERAGE		4.82	174.00	<0.55	10.11	25.40	1.08	156.85	194.50	88.20	<0.41	0.50	<0.57	11.75	8525.00	2.59	0.50	
9	1.25																			
		178	CR	2.18	229.00	<0.55	4.89	15.70	2.92	86.60	30.60	29.80	<0.41	<0.52	0.66	9.58	2770.00	1.66		< 40
		179	CR																<0.077	
		180	CR																	< 40
		181	BR	2.14	94.30	<0.55	1.55	15.40	1.07	85.30	29.40	51.70	0.60	0.71	<0.57	78.10	8340.00	1.38		
		182	BR																<0.077	
		183	BR																	
		SITE 9 AVERAGE		2.16	161.85	<0.55	3.22	15.55	2.00	85.95	30.00	40.75	<0.41	0.36	0.33	43.84	5555.00	1.52	<0.077	< 40
26	0.76																			
		187	CR	1.87	223.00	<0.55	1.74	12.70	1.35	71.30	53.60	34.30	<0.41	1.14	<0.57	25.00	6330.00	2.55		
		188	CR																<0.077	
		189	CR																	< 40
		190	BR	1.88	389.00	<0.55	9.74	13.20	3.54	71.80	68.90	62.00	<0.41	0.58	<0.57	11.30	3000.00	1.45		
		191	BR																<0.077	
		192	BR																	< 40
		SITE 26 AVERAGE		1.88	306.00	<0.55	5.74	12.95	2.45	71.55	61.25	48.15	<0.41	0.86	<0.57	18.15	4665.00	2.00	<0.077	< 40
11	0.71																			
		193	CR	2.58	158.00	<0.55	4.04	14.90	0.56	137.00	36.20	46.20	<0.41	0.68	<0.57	16.70	7100.00	1.65		
		194	CR																<0.077	
		195	CR																	< 40
		196	BR	1.66	194.00	<0.55	4.31	12.90	0.27	68.90	24.70	18.00	<0.41	<0.52	<0.57	5.86	2440.00	1.07		
		197	BR																<0.077	
		198	BR																	< 40
		SITE 11 AVERAGE		2.12	176.00	<0.55	4.18	13.90	0.42	102.95	30.45	32.10	<0.41	0.34	<0.57	11.28	4770.00	1.36	<0.077	< 40
42	2.17																			
		199	CR	3.91	56.60	<0.55	2.33	18.30	0.43	84.20	30.80	67.50	<0.41	1.06	<0.57	8.70	8650.00	2.14		
		200	CR																1.00	
		201	CR																	< 40
		202	BR	6.72	158.00	<0.55	15.60	24.50	1.01	135.00	36.60	62.50	<0.41	2.31	<0.57	17.20	3490.00	2.85		

Site	Distance‡ (Miles)	Sample		Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Manganese	Mercury	Selenium	Silver	Nickel	Zinc	Vanadium	Total PAH	HCN
			ug/m2	387*	109752*	3136*	1557*	4704*	31358*	62716*	270*	31358*	157*	7839*	7839*	31358*	470366*	10975*	145*	(Ref)
		203	BR																<0.077	
		204	BR																	< 40
		SITE 42 AVERAGE		5.32	107.30	<0.55	8.97	21.40	0.72	109.60	33.70	65.00	<0.41	1.69	<0.57	12.95	8070.00	2.50	0.50	< 40

37	**1.88**																	
		205	CR	2.08	148.00	<0.55	1.24	14.40	<0.25	75.70	26.10	14.10	<0.41	<0.52	<0.57	7.26	2630.00	1.18		
		206	CR																1.00	
		207	CR																	< 40
		208	BR	2.43	291.00	<0.55	2.57	12.50	<0.25	57.20	24.80	11.30	<0.41	<0.52	<0.57	5.21	1780.00	1.02		
		209	BR																1.00	
		210	BR																	< 40
		211	Blank	1.66	58.90	<0.55	0.87	12.00	<0.25	55.70	23.50	10.00	<0.41	<0.52	<0.57	4.88	1510.00	0.89		
		212	Blank																<0.077	
		213	Blank																	< 40
		SITE 37 AVERAGE		**2.26**	**219.50**	**<0.55**	**1.91**	**13.45**	**<0.25**	**66.45**	**25.45**	**12.70**	**<0.41**	**<0.52**	**<0.57**	**6.24**	**2205.00**	**1.10**	**1.00**	**< 40**
45	**0.29**																			
		214	CR	3.95	219.00	<0.55	11.00	23.40	1.14	246.00	64.50	57.00	1.60	1.18	1.56	54.40	5440.00	3.24		
		215	CR																1.00	
		216	CR																	< 40
		217	BR	2.45	401.00	<0.55	11.10	17.70	0.77	150.00	58.30	41.40	1.53	0.90	<0.57	27.30	2040.00	2.62		
		218	BR																<0.077	
		219	BR																	< 40
		SITE 45 AVERAGE		**3.20**	**310.00**	**<0.55**	**11.05**	**20.55**	**0.96**	**198.00**	**61.40**	**49.20**	**1.57**	**1.04**	**0.78**	**40.85**	**3740.00**	**3.03**	**0.50**	**< 40**
35	**0.88**																			
		220	CR	65.00	472.00	<0.55	112.00	71.00	7.72	270.00	326.00	270.00	2.46	1.87	<0.57	160.00	6380.00	8.74		
		221	CR																1.00	
		222	CR																	< 40
		223	BR	34.20	580.00	<0.55	19.00	64.00	25.00	298.00	294.00	184.00	4.58	2.37	1.51	80.40	4370.00	9.39		
		224	BR																2.00	
		225	BR																	< 40
		SITE 35 AVERAGE		**49.60**	**526.00**	**<0.55**	**65.50**	**67.50**	**16.36**	**284.00**	**310.00**	**227.00**	**3.52**	**2.12**	**0.76**	**120.20**	**5375.00**	**9.07**	**1.50**	**< 40**

* Settled dust screening values from the World Trade Center Report (1)

‡ Distance in miles from the EQ facility

Table 2 - Mercury Vapor Sampling Results
Summary of Indoor and Outdoor Mercury Vapor Readings
Apex, NC

Site #		Date	Time	Hg Reading Indoor (ng/m3) (Ref)	Hg Reading Outdoor (ng/m3) (Ref)	
1		10/20/2006	1603	295	335	
2		10/23/2006	1230	72	72	
3		10/23/2006	1427	111	113	
4		Declined	Declined	Declined	Declined	Declined
5		10/23/2006	1306	93	93	
6		Declined	Declined	Declined	Declined	Declined
7		10/25/2006	1435	66	69	
8		10/23/2006	1531	83	84	
9		10/25/2006	1633	57	35	
10		10/23/2006	1459	90	94	
11		10/26/2006	0952	65	70	
12		10/24/2006	1315	57	68	
13		10/24/2006	N/A	N/A	N/A	Dead Batt
14		10/24/2006	1350	72	80	
15		Blanks	Blanks	Blanks	Blanks	Blanks
16		Blanks	Blanks	Blanks	Blanks	Blanks
21		10/23/2006	N/A	N/A	N/A	Dead Batt
22		10/25/2006	1348	50	41	
23		10/24/2006	0959	57	60	
24		10/24/2006	0934	44	59	
25		10/24/2006	1050	3	1	
26		10/25/2006	1734	57	62	
27		10/23/2006	N/A	N/A	N/A	Dead Batt
28		10/24/2006	N/A	N/A	N/A	Dead Batt
29		10/24/2006	1100	21	30	
30		10/24/2006	1135	29	28	
31		Declined	Declined	Declined	Declined	Declined
32		10/25/2006	1330	40	13	
33		10/24/2006	N/A	N/A	N/A	Dead Batt
34		Declined	Declined	Declined	Declined	Declined
35		10/26/2006	1436	91	78	
36		10/25/2006	1158	4	5	
37		10/26/2006	1208	57	55	
38		Blanks	Blanks	Blanks	Blanks	Blanks
39		Blanks	Blanks	Blanks	Blanks	Blanks
41		10/25/2006	1512	61	50	

42		10/26/2006	1130	66	55	
43		10/25/2006	1555	58	51	
44		Declined	Declined	Declined	Declined	Declined
45		10/26/2006	1315	77	70	
46		Blanks	Blanks	Blanks	Blanks	Blanks
47		Blanks	Blanks	Blanks	Blanks	Blanks

Evaluation of Off-site Soil Sampling Analytical Results for the EQ North Carolina Facility, Apex, NC

11/17/06

Initial sampling of off-site soils for areas potentially affected by environmental contaminants related to the fire at the EQ North Carolina facility in Apex, North Carolina was completed on Oct. 23, 2006. A total of 37 samples were collected by Division of Waste Management personnel.

Chemical analyses of the soil samples indicate the presence of a limited number of inorganic and organic compounds at concentrations that exceed their North Carolina Soil Screening Level (SSL), the United States Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goals for Residential Soil, or the EPA Region 4 Preliminary Remediation Goals for Residential Soil. These include:

- Inorganics (Metals)
  - Arsenic
  - Cadmium
  - Chromium
  - Manganese
  - Mercury
  - Silver
- Organics
  - Tetrachloroethene (PCE)
  - Bromodichloromethane
  - Benzo(a)anthracene
  - Benzo(a)pyrene
  - Benzo(b)fluoranthacene
  - Dibenzo[a,h]anthracenIndeno(1,2,3,c,d)pyrene

North Carolina Soil Screening Levels are calculated to be protective of groundwater. They reflect the levels for each chemical at which the chemical would have the potential to migrate through the soil and contaminate groundwater. The Soil Screening Levels are calculated by multiplying the North Carolina groundwater standards by soil fate and transport factors. EPA Region 9 Residential Soil Preliminary Remediation Goals (PRGs) are levels in soil protective of human health based on typical homeowner exposure to soil. They are calculated for a residential exposure of 350 days/year for 30 years. The EPA Region 4 PRG for arsenic is based on a noncancer endpoint and is protective of childhood exposure scenarios.

Inorganics (Metals)

Arsenic

Arsenic was detected in all samples analyzed at concentrations ranging from 0.738 mg/Kg to 35.90 mg/Kg. All but one of these samples is below the EPA Region 4 residential soil PRG of 20 mg/Kg for childhood exposure to arsenic in

soil. The mean concentration of arsenic for all samples is 4.3 mg/Kg. According to the North Carolina Geological Survey, background concentrations of arsenic for parent materials in the Apex area are on the order of 1 -2 mg/Kg. However, these values may be more indicative of deeper materials than the surface soils sampled for the current investigation. Published background arsenic data from the US EPA for soils nationwide give a range of 1 - 93.2 mg/Kg. All of the arsenic concentrations identified by this sampling event are within the stated EPA "naturally occurring" range.

Mapping of the arsenic concentrations indicates that arsenic is widely distributed across the entire area sampled. The overall distribution of arsenic does not suggest dispersal from a point source centered on the EQ facility. The one sample showing an exceedance of the Region 4 PRG was taken from soil next to a residential deck made of treated lumber, a known source of arsenic. The wide distribution of arsenic may also be related to past application of agricultural pesticides.

Mercury

Mercury was detected in 36 of the 37 collected soil samples at concentrations exceeding the 0.015 mg/Kg SSL. None of the samples contained mercury at levels exceeding the 23.0 mg/Kg Region 9 PRG. Detected concentrations of mercury ranged from 0.016 mg/Kg to 0.107 mg/Kg with a mean value of 0.033mg/Kg. Published background mercury data from the US EPA for soils nationwide give a range of 0.02 - 1.5 mg/Kg. All of the mercury concentrations identified by this sampling event are within the stated EPA "naturally occurring" range.

Mapping of the mercury concentrations indicates that mercury is widely distributed across the entire area sampled. Several "hotspots" were identified, but the overall distribution of mercury does not suggest dispersal from a point source centered on the EQ facility. The highest concentration of mercury detected is associated with a sampling location at which auto maintenance/storage has occurred. Mercury is contained in many components of automobiles such as trunk, hood, and vanity lighting switches, anti-lock braking systems, high intensity headlamps, and dashboard displays. Changes or damage to these items, such as those that can occur in auto maintenance work, can result in releases of mercury. The wide distribution of mercury may also be related to regional air emissions, residuals from lighting or industrial components, or to past application of agricultural and residential fungicides.

Manganese

Manganese was detected in 19 of the 37 soil samples at concentrations exceeding the 65.2 mg/Kg SSL. None of the samples contained manganese at levels exceeding the 1,800.0 mg/Kg Region 9 PRG. Detected concentrations of manganese ranged from 16.0 mg/Kg to 264.0 mg/Kg with a mean value of 103.4 mg/Kg. Published background manganese data from the US EPA for soils

nationwide give a range of 20 - 3,000 mg/Kg. All of the manganese concentrations identified by this sampling event are within the stated EPA "naturally occurring" range.

Manganese appears to be widely distributed across the sampled area. The overall distribution does not suggest dispersal from a point source centered on the EQ facility. Manganese is a major weathering product from the chemical breakdown of rock-forming minerals. Manganese staining in the form of manganese hydroxide is common in rocks throughout the Piedmont of North Carolina. The widespread distribution of manganese in the collected soil samples suggests that the detected concentrations result from natural processes.

Silver

Silver was detected in 36 of the 37 soil samples at concentrations exceeding the 0.217 mg/Kg SSL. None of the samples contained silver at levels exceeding the 390.0 mg/Kg Region 9 Residential PRG. Detected concentrations of silver ranged from 0.148 mg/Kg to 2.1 mg/Kg with a mean value of 0.363 mg/Kg.

Silver appears to be widely distributed across the sampled area. The overall distribution does not suggest dispersal from a point source centered on the EQ facility. The source of the silver detected may be related to industrial/manufacturing activities, metals reclamation operations, or possible meteorological experimentation.

Other Metals

Chromium was also detected at concentrations exceeding the North Carolina SSL at three locations and cadmium was detected at concentrations exceeding the SSL at two separate locations. However, the distributions of these metals do not indicate their origin from a point source associated with the EQ facility.

Organics

Volatile Organic Compounds (VOCs)

Tetrachloroethene (PERC) was detected at a concentration above the North Carolina SSL in one sampling location and bromodichloromethane was detected at a concentrating exceeding the SSL at a separate location. Neither exceeded the EPA Region 9 Residential PRG. Other VOCs, generally associated with petroleum fuels or plasticizers, were also detected at levels below screening levels.

The overall distribution of VOCs does not suggest that they originated from a point source associated with the EQ facility.

Semi-volatile Organic Compounds (SVOCs)

Semi-volatile organic compounds, primarily polynuclear aromatic hydrocarbons (PAHs), were detected at three sampling locations at concentrations exceeding their EPA Region 9 Residential PRG. These included:

- Benzo(a)pyrene -2 locations
- Benzo(b)fluoranthene -1 location
- Dibenzo[a,h]anthracene -3 location
- Indeno(1,2,3,c,d)pyrene -3 locations

Detected concentrations of PAHs also demonstrate exceedances of the North Carolina SSL at the same sampling locations for:

- Benzo(a)anthracene -2 locations
- Benzo(a)pyrene -3 locations
- Dibenzo(a,h)anthracene -3 locations

The distribution of PAHs is inconclusive with regard to source. PAHs are common components of fuel oils and lubricants, asphaltic surfacing and roofing compounds, and as products of incomplete combustion of these products. The samples demonstrating regulatory exceedances in soils are located in a general downwind direction from the EQ facility. However, there are other potential sources (i.e. automotive repair, landscape activities) for PAHs at each of the sampling sites. Additional sampling may be warranted to clarify the distribution and potential source(s) of these compounds.

Evaluation of Off-site Soil Sampling Analytical Results for the EQ North Carolina Facility, Apex, NC

11/17/06

Summary

Initial sampling of off-site soils for areas potentially affected by environmental contaminants related to the fire at the EQ North Carolina facility in Apex, North Carolina was completed on October 23, 2006. A total of 37 samples were collected by Division of Waste Management personnel.

Chemical analyses of the soil samples indicate the presence of a limited number of inorganic and organic compounds at concentrations that exceed their North Carolina Soil Screening Level (SSL) and/or the United States Environmental Protection Agency (EPA) Region 9 Preliminary Remediation Goals for Residential Soil or the Region 4 Preliminary Remediation Goal for arsenic. These include:

- Inorganics (Metals)
  - Arsenic
  - Cadmium
  - Chromium
  - Manganese
  - Mercury
  - Silver
- Organics
  - Tetrachloroethene (PCE)
  - Bromodichloromethane
  - Benzo(a)anthracene
  - Benzo(a)pyrene
  - Benzo(b)fluoranthacene
  - Dibenzo[a,h]anthracenIndeno(1,2,3,c,d)pyrene

Evaluation of the spatial distribution of the observed inorganic compounds (metals) does not appear to show a pattern consistent with deposition originating from a point source associated with the EQ North Carolina facility.

Evaluation of the spatial distribution of the observed volatile organic compounds (VOCs) does not appear to show a pattern consistent with deposition originating from a point source associated with the EQ North Carolina facility.

The distribution of semi-volatile organic compounds (SVOCs), primarily polynuclear aromatic hydrocarbons (PAHs), is inconclusive with regard to source. The samples demonstrating regulatory exceedances in soils are located in a general downwind direction from the EQ facility. However, there are other potential sources (i.e. automotive repair, landscape activities) for PAHs at each of the sampling sites. Additional sampling may be warranted to clarify the distribution and potential source(s) of these compounds.

The area surrounding the facility is served by a public water supply (City of Apex). Some private wells may possibly be present within the study area.

It should also be noted that comparison of analytical results from the ash residues collected at the facility with the analytical results from off-site soil samples do not appear to indicate a strong correlation between residue compounds observed at the facility and those observed in the off-site soil samples.